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SPECIAL AIR FORCE ISSUE

# ARMY INFORMATION DIGEST

THE OFFICIAL MAGAZINE OF THE DEPARTMENT OF THE ARMY

**The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.**

**The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.**

**Manuscripts on subjects of general interest to Army personnel are invited.**

**Direct communication is authorized to: Editor, Army Information Digest, Cameron Station, Alexandria, Va.**





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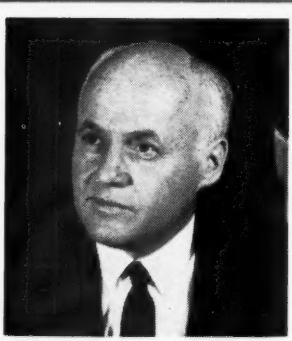
**COVER. In this Special Issue, the fast-moving Air Force sits for a self-portrait mirroring its current status, future plans, and fantastic transformation from the era of prop-driven Jennies to supersonic jets, to missiles and flights into space itself —all in the span of a single lifetime.**

**GENERAL George H. Decker, Army Chief of Staff, recently made available the columns of the official ARMY INFORMATION DIGEST as a channel for advancing understanding and appreciation among Army, Navy and Air Force members of the interdependent nature of the armed forces. The July DIGEST was devoted to the Navy theme.**

**IN THIS ISSUE, Air Force authorities present their views and interpretations of Air Force operations, to convey an understanding of the airman's role to Army associates in uniform.**



THE Army Information Digest is to be congratulated on its initiative in publishing issues devoted to the other services. These special issues are a tribute to General Decker for his recognition of the importance of greater mutual knowledge and understanding among the services. The Air Force is grateful for this presentation to the readers of the DIGEST.

The close affiliation of the Army and the Air Force, both historically and in terms of our current responsibilities, gives added significance to this special issue, particularly at a time when the Nation's demands upon the military establishment are so critical.

Eugene M. Zuckert

Eugene M. Zuckert
Secretary of the Air Force

## FEATURES



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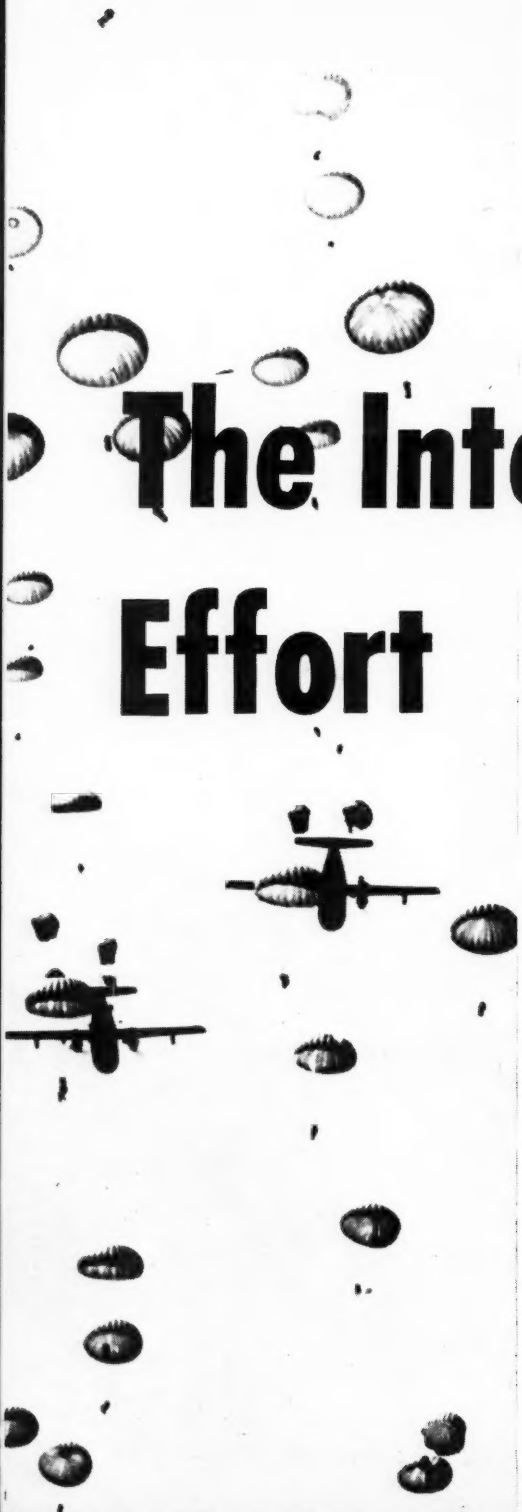


***Insuring freedom's survival is a difficult and critical task demanding all-service cooperation in***

# The Integrated Effort

**General Curtis E. LeMay**

DEFENSE is a team effort. As time and the globe continue to shrink, cooperation and understanding between the services become more and more important.

Within the over-all Department of Defense mission of deterring aggression—and of being able to prevail in war should deterrence fail—the Air Force's basic tasks are to maintain aerospace supremacy and apply air power effectively when required to support the other services in performing their jobs.

There are many differing opinions today about how to do the defense job. On one point, however, there is no disagreement:

There is only one nation that can apply significant force directly against the United States. This adversary has intercontinental ballistic missiles and jet bombers and is developing manned and unmanned space vehicles.

These aerospace forces can attack our vitals; no other form of military force can so quickly strike at our

sources of national power. Only one potential enemy has that kind of force. He can apply that force in the next thirty minutes.

Deterring such an attack is the primary mission of the Department of Defense. By building and maintaining military forces that are able to wage and win wars, we have been successful in our policy of deterrence.

United States servicemen at this very moment are on twenty-four hour combat alert here at home and around the globe, instantly ready to respond if we or our friends are attacked.

But, while the Nation keeps itself poised to handle this primary job, there are other military tasks that need doing. We need to maintain an ability to meet the threat of lesser conflicts—military actions that range from guerrilla activities through limited wars.

We must give increased attention to the kinds of other-than-general wars that are most likely to face us, and prepare to cope with them.

In this regard, our current limited war capabilities are probably more significant than most persons realize. Certainly improvements are possible and it is in the national interest to make them. But the Air Force potential to help handle limited actions, despite the constant dollar squeeze, has remained modern and vital and has taken advantage of technological progress.

### Improved Tactical Fighters

A REVIEW of recent history confirms the vital role of airplanes in limited wars.

On 6 November 1950 the American GHQ of the Far East Command issued a significant report on Korean operations. It covered the period from the initial North Korean invasion through the United Nations breakout from Pusan and the drive back toward the Yalu.

This report said that of the total casualties suffered by the enemy, aircraft accounted for 47 percent of ground personnel casualties, 75 percent of the tanks, 81 percent of the trucks, and 72 percent of the artillery pieces destroyed. Total air personnel casualties suffered while doing this job were 241!

At the start of the Korean War the World War II prop-driven P-51 was our basic tactical fighter. The F-80 jet was available in small numbers, but it was configured for air-to-air fighting. As the war progressed, we brought in newer jets—the F-84 and F-86.

Today, the standard Air Force tactical fighter is the supersonic F-100D. It is quite an improvement over its Korean equivalent. Bomb carrying capacity has jumped significantly. The F-100D has greater range than the F-86 and with in-flight refueling, which is now a routine operation, all tactical fighters can be flown anywhere in a short time.

Speed—always a factor—has gone from subsonic to supersonic. Yet slow speed operation and maneuverability have not suffered.

Today the F-105 is moving into operational units, replacing the F-100D as the standard tactical fighter. The versatile, all-weather, 1500 mile per hour Thunderchief has been described variously as a "one-man arsenal" and a "reusable guided missile." It can deliver a wide variety of modern armaments, nuclear or non-nuclear. Its high speed, long range, and refuelability enable it to fly combat-ready anywhere in the world within a few hours.

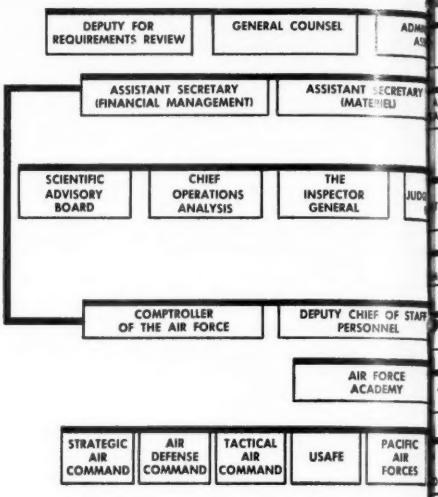
### Improved Airlift

THE airlift picture also shows significant gains with new transports to airlift STRAC and other Army units and equipment.

Early versions of the turboprop C-130, today's primary troop transport, are being supplemented by the extended range C-130E and the jet cargo C-135. These modern transports are backed up by the considerable airlift capability of the Air Force's

C-118s, C-121s, C-123s, C-124s and the giant C-133s for heavy cargo hauls.

Many of these aircraft will be replaced by the high-speed, long-range turbofan C-141 that can lift forces to overseas areas and air-drop troops and cargo at destination or land on 6000-foot runway airfields to debark loads. The Air Force Reserve's C-119s, C-123s and C-124s; the Air National Guard's C-97s; and, in certain emergencies, the Civil Reserve Air Fleet can be pressed into service.




## New Weaponry

NOR has the Air Force been idle in the field of new weapons. Recognizing the responsibility for providing a dual capability, the Air Force spurs development and acquisition of new conventional weapons along with our new nuclear weapons.

For example, the Bullpup—a super-accurate air-to-surface missile—has become the backbone of the Air Force's conventional limited war armaments. This pilot-directed missile has vastly improved our ground support potential.

The Vulcan, our dramatic new Gatling gun—a 20mm cannon that fires at the rate of 6000 rounds per minute—is installed in our newest fighters.

We have developed a much-improved napalm bomb, adaptable for use with our latest tactical aircraft.

And an improved Sidewinder air-to-air missile is being evaluated. The operational version of this weapon was battle-proved in Formosa and simplifies the task of keeping enemy air out of a ground combat area.

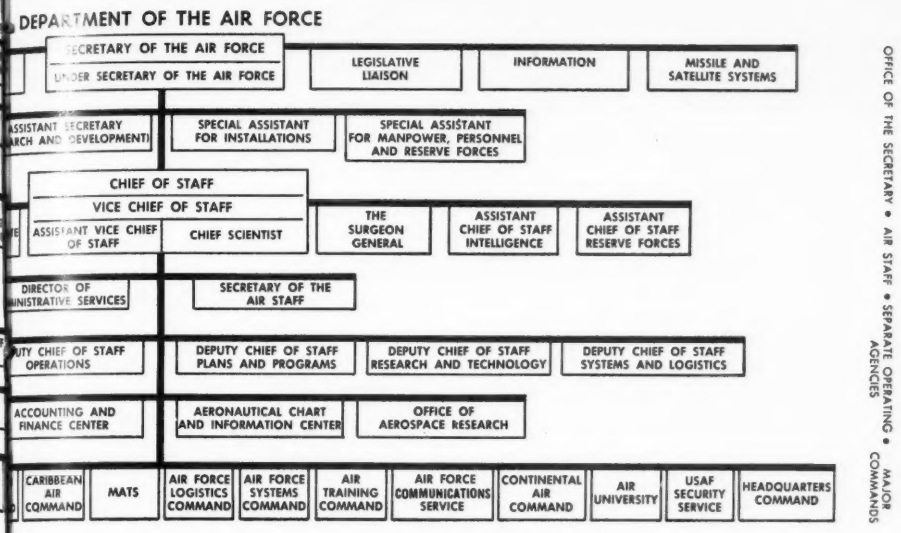
The Air Force also has developed tactical missiles to augment tactical aircraft and to assure enhanced survivability in forward areas. Current operational missiles include the Matador and its follow-on, the Mace, which offers significant new flexibility.

## New Concepts

WE have recognized, too, that weaponry in many instances has outdistanced concepts—it does little good to force new weapons into old ways of employing them. As a result, the Air Force has been in the forefront in proposing new concepts for handling limited military actions.

Out of our search for the better method came the Composite Air Strike Force—CASF. This is our packaged limited war force that is always on the alert to hurry to trouble spots anywhere in the world, self-

General Curtis E. LeMay
Chief of Staff,
United States Air Force




sufficient and in the strength needed for the emergency.

Last year the Air Force proposed the combination of certain units of the Tactical Air Command and the Army's Strategic Army Corps into a unified tactical command. Experiments and planning along these lines are designed to increase mobility and striking power for limited war forces. Continuing Army-Air Force efforts will lead to the development of integrated fighting packages to handle actions that range from sub-limited to larger emergencies.

### Joint Exercises

JOINT Army-Air Force limited war planning is continuous. And it is punctuated by exercises that test and improve plans and tactics. For example, Project Big Slam last spring tested Air Force airlift capability and highlighted strong and weak points for future guidance. This spring's Long Pass tested a joint CASF-STRAC deployment with operational employment of fighter-bomber and reconnaissance elements that drew high praise from the JCS-appointed Army task force commander. New exercises now in the planning stage will incorporate lessons from Long Pass.

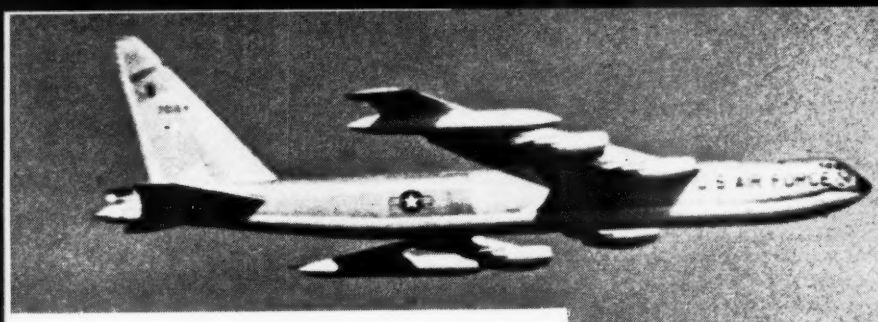
Constant modernization is the key to capability. For the immediate future a requirement exists for modern tanker aircraft to get significant improvement in the speed with which to move CASFs overseas. And we need improved and specialized modern airlift like the C-141 to get Army units into position more quickly.

In summation, the Air Force has a sizable capability for limited war. We are maintaining and improving it while we simultaneously maintain a strategic force capable of prevailing in any conflict with the one nation capable of a direct strike at the United States.

### The Strategic Challenge

THE Services must never lose sight of the number one mission—to maintain the ability to prevail in war against the military forces of any aggressor; not merely to retaliate, but to locate these forces, penetrate enemy defenses, and destroy the weapons that could attack the United States.

Staying ahead of Soviet strategic power is going to take us far out into aerospace with manned and unmanned systems. For the high ground of the future—the ground from which



an enemy can gain tomorrow's access to the United States—is in aerospace. The real test of military management for the future, then, will be to attain these costly new capabilities to meet tomorrow's strategic challenges while we continue to improve the forces needed to handle those less-than-general war actions that are likely to occur.

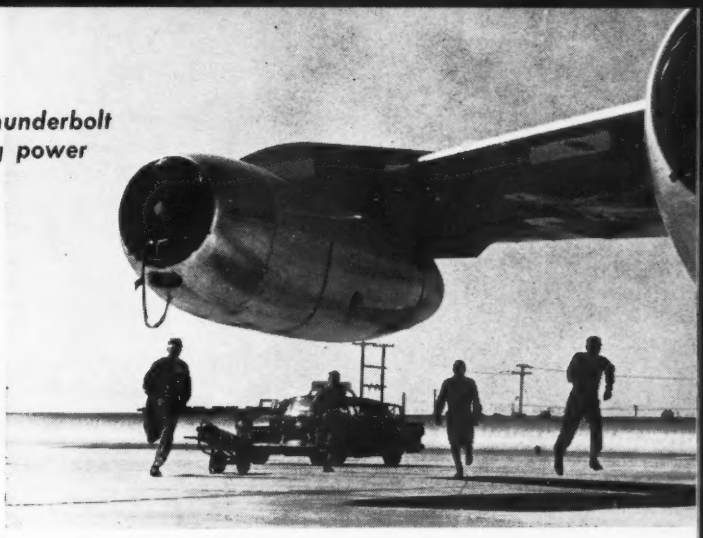
The job is getting tougher. We face an adversary who no longer follows in our footsteps. On the contrary, he breaks new technological ground independently after a fifteen-year apprenticeship during which he forced the pace by a combination of native intelligence and maximum use of the Free World's freely-shared research and development efforts. Worse, his form of government allows him to pursue forced-draft scientific explorations to enhance his military abilities. The recent public disclosure of two new ultramodern jet bombers typifies his efforts to keep pressure on us.

This kind of disclosure has become commonplace. In spite of that fact, some still argue that strategic forces have stalemated each other. But maintaining a stalemate in today's technological environment is next to impossible. An offensive or defensive breakthrough can make yesterday's "stalemate" today's fiction.

The task ahead of us in the Department of Defense is both difficult and critical. Mistakes can cost us our freedom. The job requires the subordination of individual service interests to a national, integrated effort.

**A B-52 long-range bomber sweeping over an Atlas missile at Vandenberg AFB epitomizes Air Force role.**

*The long-range thunderbolt of nuclear striking power is wielded by*



# Strategic Air Command

**General Thomas S. Power**

IN Limestone, Maine, an eight-jet B-52 Stratofortress roars to full voice as the huge aircraft starts its takeoff roll . . .

At an air base near Madrid, Spain, a B-47 alert crew studies maps and manuals within a short distance of its aircraft and listens for the angry sound of the alert klaxon . . .

At F. E. Warren Air Force Base in Wyoming, a missile crew runs through the countdown for a simulated launch.

Thousands of miles separate these three scenes, yet each represents a vital part of the most powerful and closely-knit military organization in history—the United States Air Force's Strategic Air Command (SAC).

SAC passed its fifteenth anniversary on 21 March 1961, greatly expanded and modified since its establishment in 1946 but working under a mission that remains unchanged — to deter war through a position of strength, and, if an enemy does attack, to have the capability to fight and win.

As the Air Force's long-range nuclear striking arm, SAC possesses the Free World's heaviest punch—about 90 percent of the total striking power, as measured in TNT equivalents. The magnitude of this firepower is demonstrated by the fact that the bomb bay of one B-47 or B-52 carries greater explosive power than all of the bombs expended by both sides during World War II. SAC's ICBMs also carry potent nuclear warheads.

SAC's 24-hour-a-day job of deterrence requires this firepower. It also requires a force of more than 260,000 intensively trained and dedicated personnel to carry out the multitude of tactical and support roles.

It is obvious that the only force which can discourage war is one which is capable of winning one. Nothing short of the threat of immediate and certain defeat can hold the enemy at bay.

While it is responsible for the major share of the Free World's strategic requirement, SAC does not consider itself the sole deterrent force. The deterrent mission demands all the varied efforts of land, sea and air forces.

### Command Organization

AS a specified command of the Department of Defense, SAC is under the direct control of the Joint Chiefs of Staff and the Secretary of Defense, acting as executive agents of the President. Only the President can order SAC to strike enemy targets and expend nuclear weapons.

SAC aircraft and missile forces are located at more than 80 bases in the United States, Europe, Africa and in the Pacific. Supervision and direction of this gigantic network of bases emanates from command headquarters at Offutt Air Force Base near Omaha, Nebraska.

Major subordinate commands include Second, Eighth and Fifteenth Air Forces and First Missile Division in the United States; Sixteenth Air Force in Spain and North Africa; Seventh Air Division in the United Kingdom; and Third Air Division on Guam.

The most complete and reliable communications network in the world links all SAC units and bases with command headquarters. Special "hot line" telephone systems provide instantaneous contact between command posts and bases and tie key SAC officers with the Joint Chiefs, the Secretary of Defense and the President.

Teletype circuits send classified and unclassified messages in seconds throughout the command and to other service agencies. Single side-band radio, beamed from 45,000-watt transmitters, provides voice contact between SAC's underground command post at Offutt and command tactical aircraft in flight over any part of the globe.

These three separate communication systems plus alternate command posts and a constantly airborne KC-135 command post guarantee that SAC can be ordered into action and its operations controlled under any circumstance.

### Alert Procedures

TREMENDOUS advances in military technology over the past 15 years have compressed warning time of a surprise enemy attack to a matter of a few precious minutes. SAC must be sure it can react within this slim warning margin—or even in the event of no warning.

To guarantee this, SAC has taken many steps. Continuous closed circuit television and telephone contact is maintained between the Command Post and the Combat Operations Center of the North American Air Defense Command at Colorado Springs, Colorado. NORAD's aircraft and missile warning stations almost certainly will give SAC its first indication that the country is facing imminent attack. Once this warning is received, SAC can use its primary alerting system, keyed by the famous "red telephone," to launch its aircraft under positive control and order missile crews to stand by for launch.

Since October 1957, SAC ground alert procedures have assured that enough of its force can survive, even in the event of a surprise attack, to achieve military victory for the United States in a nuclear war.

More than one third of the command's bomber and tanker aircraft are on alert at all times. Aircraft are fueled, loaded and primed for imme-

General Thomas S. Power
Commander-in-Chief
Strategic Air Command

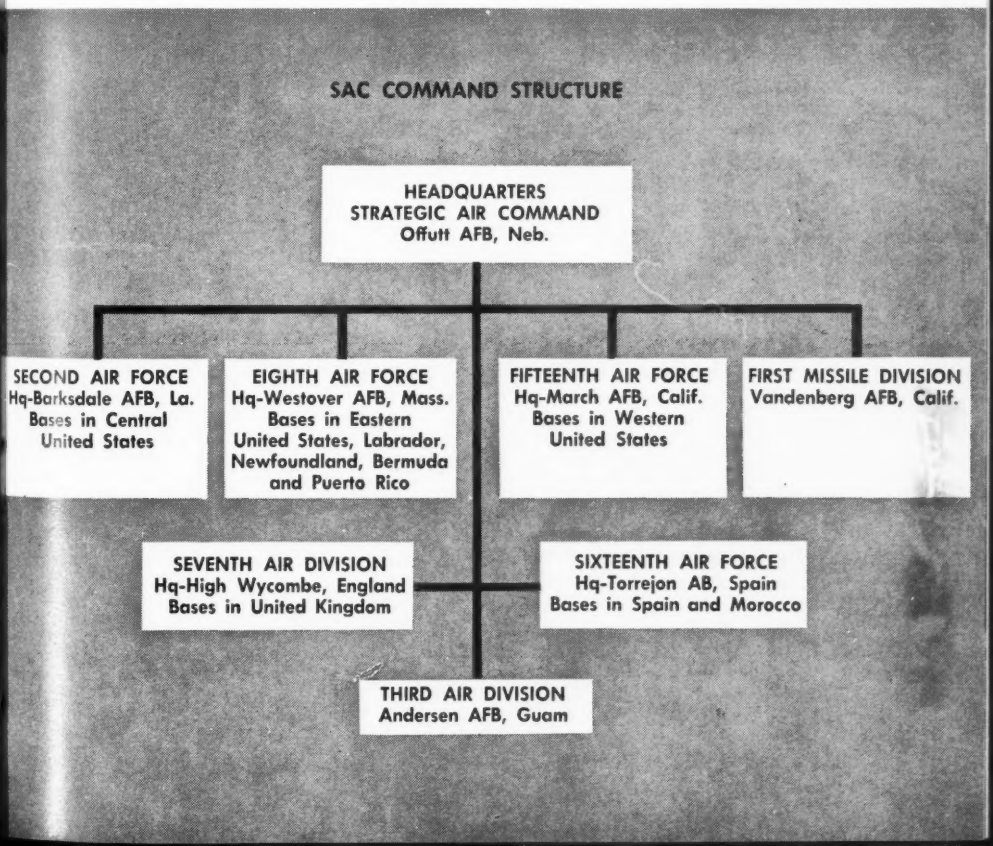
diate takeoff. Crews stay together in flying clothes and remain on duty within a short distance of their planes. When the alert klaxon sounds, these planes can be off the ground within a few minutes, well within the warning of an ICBM attack as provided by the Ballistic Missile Early Warning System (BMEWS).

The ground alert force is tested daily, and crews are timed on their reactions. These alerts often take the aircraft to the active runway before the signal to return to the parking ramp is relayed. Crews react as though each alert were an actual wartime order.

A portion of the B-52 force is carrying on an airborne alert training program—a further guarantee of force survival. Each B-52 unit in SAC conducts regular airborne alert training missions. At operational ICBM bases, a portion of the missile force is also on constant alert, ready to launch on orders from the SAC command post.

Bombers and tankers at overseas bases operate under the same ground alert status as at SAC bases in the States. These crews and planes, which are permanently assigned to bases in this country, rotate regularly to overseas bases under the "Reflex" concept. Aircraft do not return to the United States until their replacements are in place.

"Reflex" offers three advantages. First, it places SAC aircraft closer to a potential enemy's heartland, thereby reducing the requirement for air refueling. Second, it complicates an enemy's targeting problem by dispersing the force to many more bases. Third, it enables more SAC aircraft to be launched in an alert situation because more runways are available.



### Protective Deployment

DISPERSAL also applies to the SAC missile force in the United States. Missile sites are spread over a wide area to reduce, to the point of virtual impossibility, an enemy's chances of striking a decisive blow. Many of these sites are also of hardened design in concrete to withstand anything short of a direct hit by a nuclear weapon. To attempt destruction of these sites, the enemy must program a great number of his own weapon systems, thus placing a severe burden on his economy and forcing him to neglect other vital aspects of his own military posture. He cannot be sure that he can strike all these bases simultaneously and escape defeat.

In building these missile sites, the Air Force relies heavily upon the skill and dedicated effort of the U.S. Army Corps of Engineers. Both services, working together with missile systems contractors, are phasing missile sites into operational status throughout the United States. (See "Constructing Missile Sites," April 1961 DIGEST.)

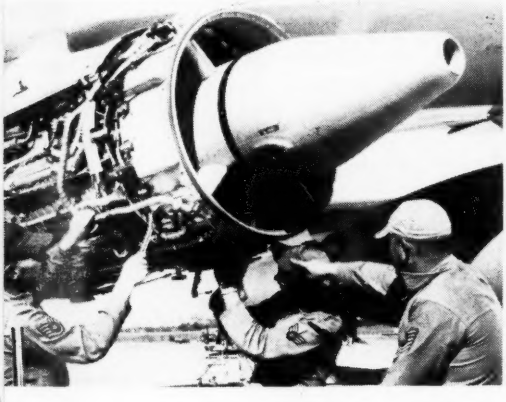
The Army is also represented on the Joint Strategic Target Planning Staff (JSTPS), located at Offutt and directly supervised by the Joint Chiefs of Staff. Other members are drawn from the Navy, Marine Corps and Air Force. This staff analyzes intelligence on enemy strategic targets, establishes target priorities and assigns responsibility for destruction of these targets to appropriate weapon systems, commands and services. A single integrated operational plan, developed by the JSTPS, assures full effective use of the Nation's various nuclear striking forces, should the United States ever be forced into a war.

### Aircraft and Weapons

THE SAC force alone is an awesome collection of the most modern and reliable weapon systems available. The command operates almost 2,000 bombers, 1,000 tankers, air-to-ground missiles and a growing force of ICBMs.

SAC's first all-jet bomber was the B-47 Stratojet, a six-engine aircraft which can fly at more than 600 miles per hour at altitudes above 40,000 feet to cover an unrefueled range of more than 3,000 miles. The primary bomber in the SAC inventory, however, is the B-52 Stratofortress, with eight jet engines, speeds greater than 650 miles per hour, and altitude capabilities above 50,000 feet. Various B-52 models can fly 6,000 to 10,000

Skilled technicians keep the jet engines of tactical aircraft operating, left. At right, controller team runs a check in the new Airborne Command Post.



miles without refueling.

Eventually many B-52s will be equipped with Hound Dog, a supersonic, nuclear - armed air - to - surface missile which can be used to destroy defense centers standing between the bomber and its target or can be directed against alternate strategic targets. The B-52 also can carry several Quail decoy missiles. Launched in flight from the bomber, these decoy systems reflect images on defense radar screens similar to that of the bomber, thus "hiding" the B-52 in a "snowstorm" of radar reflections.

SAC's newest bomber is the B-58 Hustler, a delta-wing aircraft which flies faster than 1,300 miles per hour and operates at altitudes above 60,000 feet. Hustler, the Free World's first supersonic bomber, carries its weapon in a detachable pod slung under the fuselage.

Aerial refueling has been a routine operation in SAC for several years. The workhorse tanker fleet extends the range of SAC bombers indefinitely, enabling them to strike any target in the world and return to their bases. Every few minutes around the clock a SAC bomber and tanker hook up somewhere over the globe to transfer thousands of gallons of jet fuel.

SAC's oldest tanker is the KC-97, the last propeller-driven combat aircraft in the command inventory. However, it is being replaced rapidly by the KC-135 Jet Stratotanker, which flies at speeds in excess of 600 miles per hour and operates at altitudes compatible with the bomber force.

### Aerospace Concept

THE principle behind SAC's build-up of bombers and missiles is the "aerospace force" concept. It is based on the command's belief that only a force combining all the best features of manned and unmanned systems can pose an effective deterrent to potential aggressors or counter and destroy enemy forces. Tactics have been developed to insure that this force can be applied to its fullest potential in the event of a general nuclear conflict.

B-47 alert crew practices for real thing. Aircraft commander mounts ladder to start engines as pilot, navigator follow.

A hypothetical situation illustrates how this force would be used:

Upon receipt of warning from NORAD that the United States was threatened with imminent attack, the primary alerting system would be used to launch all ground alert aircraft and notify missile crews to stand by for launch orders. Bomber crews have pre-assigned targets and routes.

Once the aircraft are airborne, SAC's Positive Control procedure goes into effect. Each bomber has a predetermined point, well short of enemy territory, beyond which it will not go unless specific coded instructions are received under Presidential authority. Missiles cannot be recalled or diverted after launch, so they may have to "ride out" the first wave of attack to avoid any chance of starting a war under false warning.

High-altitude fuel transfer extends range of B-52, above. The B-58 Hustler, below, is supersonic bomber.

Prototypes of Skybolt, an air-launched ballistic missile, ride on their pylons between turbofan jets of new B-52H.

During the interval between launch of the ground alert force and arrival at the Positive Control points, the Nation's civilian authority will have time to determine whether there is an actual attack and whether the United States must strike. If strike orders are issued, this Go-Code would be flashed in seconds to all aircraft and missile crews from underground or airborne command posts. If the decision is reached that no counter-blow is required, aircraft would return to their bases automatically without the necessity for transmitting recall orders.

During the interval before the Go-Code is issued, follow-on missions would be generated to place even more firepower on enemy forces. Manned aircraft over the target area in wartime would send back damage reports, enabling the battle staff to direct restrikes where necessary to assure destruction of priority targets.

### Manned Weapons Systems

THE reconnaissance capability is a major advantage of a manned weapon system. Others include the ability to react under unpredictable situations, to seek out hidden targets, divert to alternate targets and respond to orders given while in flight. For these reasons, there will always be a need for the manned weapon system.

Currently under development for the Air Force of the 1965-75 period is the B-70 Valkyrie, a breakthrough in aircraft development and the most versatile bomber ever conceived. Comparable in size to the B-52 and capable of using runways now in existence, the Valkyrie will fly at speeds greater than 2,000 miles per hour—faster than a rifle bullet—and operate at altitudes near 80,000 feet.

The B-70 will be able to reach the majority of its targets from bases in this country and proceed to a recovery base without refueling. It is designed to be virtually invulnerable to enemy defensive systems. Design engineers also maintain that the B-70 airframe

offers excellent possibilities for conversion into a Mach 3 transport.

Skybolt—currently under development as SAC's first air-launched ballistic missile—is designed for delivery from B-52s approximately 1,000 miles from target. This hypersonic missile will carry a nuclear warhead and contain a guidance system immune to enemy jamming.

### Intercontinental Missiles

THE Atlas, a stage-and-a-half, liquid fuel missile capable of traveling more than 6,300 miles in a little over a half hour, is SAC's first operational ICBM. It reached that status in September 1959, in a successful launching from Vandenberg AFB. Atlas is now operational at three SAC bases—Vandenberg, Offutt and F. E. Warren. All SAC missile maintenance and launch crews are trained by First Missile Division at Vandenberg AFB.

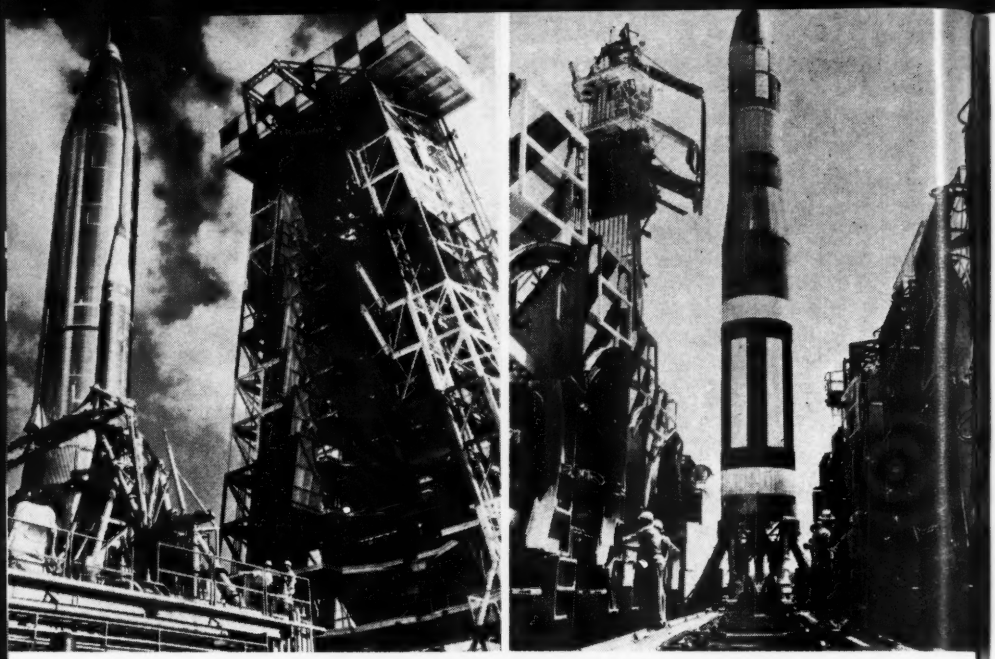
SAC's second ICBM—the Titan—will become operational in 1961. Designed for sheltering in dispersed, concrete-lined launch silos, Titan is an advanced liquid-fuel missile. A later version, the Titan II, will include the advantages of storable liquid fuels and the capability for launch from within the silo. (Titan I will require elevator lift to the surface before launch.)

SAC's number 1 priority in weapon system development at this time, however, is the solid-fuel Minuteman. This will be the simplest and most economical strategic missile in the command. Minuteman's highly simplified internal and support systems will enable the missile to be maintained for extended periods with only occasional service checks, ready for immediate launch if the Nation were attacked.

Minuteman development is being supervised by the Air Force Ballistic Systems Division. Scheduled to become operational in 1962, the new ICBM will permit launch controllers to fire their missiles in salvo or sequence as directed. In the event of war, controllers in secure underground blockhouses, miles from a launch complex, could work in unison.

SAC is programming two methods for securing its Minuteman force from destruction, even in the event of a sur-

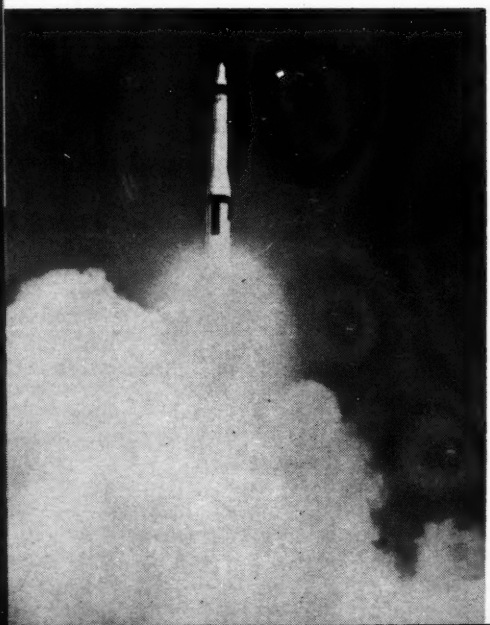
From an underground SAC command post an operations officer uses closed circuit TV to give briefing.



Atlas, standing beside its gantry at left, was SAC's first operational ICBM. Titan being readied for test launch, right, can deliver heaviest U. S. nuclear weapons.

prise missile assault by an enemy. A large portion of the force will be spread over a wide area of the United States in hardened silos which could be knocked out only with direct hits by nuclear weapons. The number of weapons needed to insure destruction of all these sites will impose tremendous costs on an enemy and therefore increase the Nation's deterrent margin. The fact that these sites could not be destroyed in simultaneous strikes further deters the enemy.

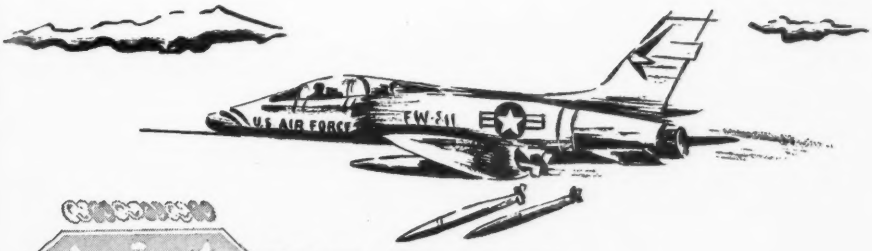
Later, other Minuteman missiles may be placed in special railway launch cars and moved constantly over the country's vast trackage network. Crews could stop at any of thousands of rail sidings throughout the country and fire their missiles within minutes.



AS military space development efforts receive ever-increasing attention, it becomes obvious that one of the most important uses of space will be its utilization as a powerful lever for the maintenance of peace. In the coming era, the motto of SAC—"Peace is Our Profession"—still will apply as man reaches the newest realm of his expanding frontier.

The solid-fuel Minuteman, here staging a successful test flight, will be a simple, economical strategic missile.

*Maintaining aerial superiority over the fast-moving combat area is the challenging role of*




# TACTICAL AIR COMMAND

**Major General S. J. Donovan**

DEFINING tactical air power is no simple task. Originally, it was more easily defined as "battlefield aviation" with the mission—"gain and maintain aerial superiority over the battlefront, isolate the enemy from his supplies and reinforcements and attack his positions."

While these functions are still of prime importance, the battlefield moves about the world as rapidly as quicksilver on sand. Hit-and-run tactics are planned to keep us off balance and off guard. But by keeping pace, tactical air power has gained new depth and dimensions with its modern aircraft and ultra-mobility.

Today it can be said that in the diversified and highly specialized aerospace tasks performed within the United States Air Force, the Tactical Air Command (TAC) is the primary air arm to combat small or limited war aggression. Through its employment of forces and its capability for rapid reaction to world-wide situations TAC also contributes immeasurably to the deterrence of all-out or general war.

During World War II, tactical air power proved itself as one of the main factors in allied victory. General O. P. Weyland's outstanding tactical fighter support of General George Patton's armored dash through Central Europe remains a prime example of effective application of tactical air power in

supporting a ground commander.

The effectiveness of tactical air was again vividly demonstrated during the Korean War. Tactical air forces were employed almost daily in diversified interdiction, close air support and air superiority missions against enemy supply and communication lines, entrenched enemy troop positions and against enemy fighter sweeps from beyond the Yalu River. As a result, we were able successfully to restrict the North Korean and Chinese Communist forces to limited night resupply efforts and extremely limited movement during daylight hours.

Throughout the Korean War, our tactical fighters were able to secure and maintain air superiority. As a result, the United Nations ground forces were never seriously subjected to enemy air action.

### Same Missions, New Equipment

ONE of the primary tasks of tactical air forces is to accomplish air superiority and maintain it so the ground battle may proceed at the will of the ground commander and so that necessary tactical air can be effectively applied against enemy ground forces.

Although tactical air requirements and missions are still very similar to those of World War II and Korea, exotic technological developments in equipment and armaments during the past fifteen years have considerably altered techniques and methods.

A single tactical fighter today, for instance, traveling at twice the speed of sound, can carry more firepower in a single mission than all the tactical aircraft employed during the entire Korean War. But because of this fighter's tremendous versatility, it is also capable of carrying this tremendous armament into a battlefield area at speeds comparable to the fighters of World War II. It can loiter near the front lines to seek out and destroy enemy troop emplacements—or in a single attack, neutralize a critical bunker on the far side of some impregnable hill.

New weapons, such as the Bullpup air-to-surface missile and new anti-personnel and anti-vehicular weapons, allow today's tactical fighters to be extremely effective at longer ranges and at almost any speed. This choice ranges from a loiter speed of 185 knots to a Mach 2 dash—a range stretching over 1500 miles per hour.

### Air Strike Force

AS an outgrowth of wartime experience plus years of research and development, the Tactical Air Command has successfully developed a concept for alerting and deploying a small but powerful force of modern fighter, reconnaissance, troop carrier and air refueling aircraft. This enables TAC to have the lightning-quick reaction and modern combat force so critically needed in today's era of small, aggressive acts. These forces are known individually as Composite Air Strike Forces (CASF).

Under the control of TAC's Nineteenth Air Force, they are pre-packaged, highly versatile and fast reacting "Air Forces in miniature" which can be moved to any spot having a suitable landing strip anywhere in the world within a few hours of notification.

Major General S. J. Donovan
Deputy for Operations,
Tactical Air Command

A paramount criterion in developing the CASF concept was that the force had to be highly versatile and mobile and have the ability to move within a matter of hours to any spot on the globe. It had to be of significant size and strength and be able to sustain itself for at least thirty days. It also had to be tailored to meet any contingency.

During the Lebanon and Taiwan crises, two separate CASF's, each equipped with the full complement of conventional war weapons—napalm, 750-pound bombs, rockets and 20mm cannon—were rapidly positioned into these areas, ready for instant action. Average time for a fully complemented CASF to be deployed to Europe and the Far East is 32 hours and 72 hours, respectively. With an all-jet tanker force and addition of jet transports, these figures could be reduced.

To reduce such reaction time to an absolute minimum, various operational tactical units have been assigned a specific commitment of personnel and equipment for possible CASF deployments. This takes the form of an assignment of fighter aircraft from the several tactical fighter units, transport aircraft from troop carrier wings, aircraft from reconnaissance wings and the essential aerial refueling KB-50 tanker aircraft.

Considered world's most powerful one-man fighter, F-105 Thunderchief shows lethal load of bombs, rockets, missiles.

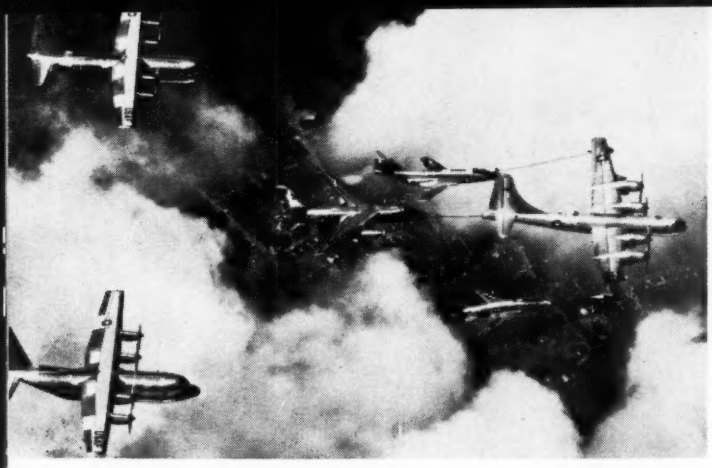
### On the Alert

BESIDES setting up prior commitments of tactical aircraft, pre-packaged "fly away kits" for these assigned aircraft and for CASF deployments have been assembled and placed in special storage areas. These kits contain the vital resupply equipment so necessary in any continuing tactical operation. Essential items such as spare engines, delicate fuel control mechanisms, hydraulic pumps, tires and wheel assemblies and numerous "nuts and bolts" as well as clothing, medical and administrative supplies make up the bulk of these kits.

When the bell rings for a CASF deployment and the alert system commences its countdown, years of careful planning and organization are automatically set into precise, smooth running motion. The pre-committed CASF transport aircraft, one of the first elements to be alerted, are flown to the bases of CASF fighter and reconnaissance squadrons. There they on-load the "fly away kits" and key support personnel. When the final implementation signal is announced, these transport aircraft as well as the other elements of CASF are sent on their way.

Within hours after the forward elements arrive at the destination point, the entire CASF is prepared for action. CASFs have the flexibility to support a simultaneous Strategic Army Corps landing and assault, to complement a theater commander's Air Force, or to act individually on their own.

In addition to the U. S.-based CASF elements, the Tactical Air Command keeps a combat-ready commitment of F-100 and F-104 fighter units on rotation in Europe. These will soon be complemented by the newer F-105, the world's most effective and versatile



Three planes refuel in mid-air flight from huge KB-50J tanker as two support aircraft follow close alongside.

tactical fighter aircraft.

Elements of TAC's C-130 transport aircraft fleet are also on rotational duty in Europe to support the theater commander's airlift requirements.

### Organization

TO accomplish its many missions, the Tactical Air Command is organized into three subordinate Air Forces, composed of more than 50,000 men and women and over 1,300 fighter, aerial tanker, reconnaissance and transport aircraft. These subordinate Air Forces are the Ninth Air Force at Shaw AFB, South Carolina; the Twelfth Air Force with headquarters at Waco, Texas; and the Nineteenth Air Force at Seymour Johnson AFB, North Carolina.

TAC headquarters is located at Langley AFB, Virginia, near Fort Monroe, Headquarters of the Continental Army Command. In addition to the major subordinate commands, TAC also operates the USAF Air Ground Operations School (AGOS) at Keesler Air Force Base, Mississippi, where orientation courses are conducted for selected officers of the Air Force and the Army in joint tactical operations.

In addition, AGOS conducts a special course for highly qualified tactical fighter pilots selected for duty as Forward Air Controllers (FACs). A proportion of FACs are trained to jump into the battle area with the forward elements of an airborne unit to direct initial tactical fighter attacks against enemy positions during close air support missions.

The Tactical Air Command also—through the 4504th Missile Training Wing, located at Orlando AFB, Florida, and operating under control of TAC's Ninth Air Force—has the responsibility of training crews in the operation and support of the Mace tactical missiles. Following training the crews man operational Mace installations in Europe and the Far East.

### Tankers and Troop Carriers

TAC's Ninth Air Force is responsible for aerial tanker, troop carrier, transport and reconnaissance aircraft. The tanker is the KB-50J. Capable of refueling three aircraft simultaneously, this aircraft is powered by four reciprocating engines and two jet engines. The troop carrier and transport aircraft are the twin-engine C-123 and the four-engine turbo-prop C-130 transports. The reconnaissance aircraft are the single cockpit RF-101 Voodoo and the three-man RB-66.

It is in the Ninth Air Force's C-123 and C-130 aircraft from Pope AFB, North Carolina, and Sewart AFB, Tennessee, that Army paratroopers gain their airborne experience at Forts Bragg, Campbell or Benning. The Army is allocated approximately 50 percent of available flying hours on both C-123 and C-130 aircraft. This

means that over 1800 hours per month, or 31 C-123 aircraft per day, and over 1500 hours per month or 30 C-130 aircraft per day, are utilized by the Army.

The aircraft are assigned such missions as support of the Airborne Electronics Board at Fort Bragg, the Quartermaster Research and Engineering Field Evaluation Agency Test Station at Yuma, Arizona, the Quartermaster Training Command at Fort Lee, Virginia, and Army airborne training at Forts Benning, Campbell, and Bragg.

The remaining half of TAC's airlift capability goes to support TAC and United States Air Force airlift requirements in various training exercises, maneuvers, deployments. It also is engaged in semi-annual resupply of Ice Island Bravo (T-3) in the Arctic and resupply of DEW line radar sites in Greenland.

Numerous joint training exercises employing Army STRAC and Air Force CASF units have proven the reliability and effectiveness of both the C-130 and C-123 as troop carrier, assault and support transport aircraft.

During Operation Solidarity in the Panama Canal Zone, over 25 successful sorties were flown by C-130 aircraft flying non-stop from Pope AFB to airdrop more than 1400 troopers and heavy equipment into the Rio Hata area. In this same exercise, 50 C-123 aircraft were used in direct support of the U. S. Army and Latin American ground units, accomplishing aerial drops and assault landings on rough terrain.

More recently, C-130s successfully airlifted the entire 2d Airborne Battle Group from staging bases in Okinawa to the drop zone in the Philippine Islands during Exercise Long Pass.

## TAC Fighters

TWELFTH Air Force is responsible for tactical fighter aircraft in the command. In addition it conducts tactical fighter training for TAC pilots and for fighter pilots of TAC's counterparts in the unified commands overseas: Pacific Air Force and U. S. Air Forces in Europe.

Tactical fighters from Twelfth Air Force also support numerous joint Zone of Interior Army-Air Force training exercises. They also provide the fighter element for TAC's Composite Air Strike Force deployments.

Twelfth Air Force fighter bases are located at Myrtle Beach AFB, South Carolina; Seymour Johnson AFB, North Carolina; England AFB, Louisiana; Cannon AFB, New Mexico; Luke AFB, Arizona; Nellis AFB, Nevada; and George AFB, California.

## Fighter Aircraft

THE three primary tactical fighters presently in the TAC inventory and under the Twelfth Air Force are the F-104 Starfighter, the F-100 Super Sabre and the newest addition, the F-105 Thunderchief.

The F-105 embodies all the characteristics so long sought in a tactical fighter—the economy of versatility, a high degree of reliability, and survivability on target. It has a high-speed Mach 2 dash (twice the speed of sound), an essential requirement for any air superiority fighter; and a high-speed dash capability at low levels which considerably reduces its vulnerability to enemy ground fire.

The F-105 can loiter for up to three hours at a slow speed. With mid-air refueling, it can leave a base in the United States, fly to some troubled spot half the globe away and go into battle armed with a wide selection of conventional ordnance.

This includes highly effective Bullpup air-to-ground missiles, air-to-ground rockets, napalm fire bombs and the more recently designed non-nuclear anti-personnel and anti-vehicle weapons. Its conventional armament is further augmented with the new Army-developed Vulcan 20mm cannon capable of firing over 6,000 rounds a minute, or 100 shells in one second. The F-105 also is capable of carrying


The four-engine turbo-prop C-130 Hercules troop and cargo carrier is widely used in joint training exercises for Strategic Army Corps units.

a high yield nuclear weapon in its internal bomb bay.

The first fighter in the world to have a complete all-weather capability, the F-105 can take off at night under the most adverse weather conditions, fly at high or low altitude to a target and still accurately deliver its payload —in some instances regardless of weather conditions in the target area.

### Reserve Responsibility

IN addition to its regular forces, TAC is responsible for training and monitoring the effectiveness of the air reserve forces which have been earmarked for D-day assignment to TAC. This encompasses all of the tactical fighter and reconnaissance units in the Air National Guard and the troop carrier units of the Air Force Reserve.

Total reserve manpower that can be called to service with TAC numbers over 54,000 trained personnel and over 1,400 combat-ready fighters and transport aircraft. Reserve Troop Carrier Wings are equipped with C-119, C-123 and C-124 aircraft; the ANG fighter force with F-84F's, F-86H's and F-100's, and ANG reconnaissance forces with the RF-84F and the RB-57.

Bright Star/Pine Cone III is an excellent example of the training TAC affords these reserve units. In this exercise alone more than 500 reserve C-119 aircraft were massed for personnel and heavy equipment drops into the exercise area. Over 100 National Guard fighters took part daily in air defense missions against simulated enemy aerial attacks.

But exercises, such as Bright Star/Pine Cone and the more recent Swift Strike, are merely continuing examples of how TAC would integrate the reserve forces in an actual emergency situation. Fighters of the Air National Guard, as well as troop carrier elements of the Air Force Reserve, are constantly called upon to execute training exercises and operational readiness inspections identical with those of TAC regular forces.

If ever the situation arises, these reserve forces must be ready to augment TAC forces already committed. With the training TAC now affords these units, they will be prepared.

Paratroopers prepare howitzer for action after a successful drop from TAC aircraft during maneuver.

ALL THIS is the Tactical Air Command. Through its many-faceted and far-reaching operations, TAC must be the master of many tasks—supplying vital troop carrier support to the Army, responsible for the tactical fighters of the Air Force, speeding to any spot on the globe to help thwart any would-be aggressor.

TAC trains and provides the tactical fighter pilots for the overseas unified commands—namely, PACAF in the Far East and USAFE in Europe. TAC trains personnel for Mace tactical missile sites overseas. It operates and administers the Air Ground Operations School where Army, Air Force and Navy members study and evaluate joint military operations.

In fulfilling each of these roles with a high degree of excellence and professionalism, TAC is ready, able and prepared to perform its principal overall mission—to complement America's armed might in protecting the Free World against any aggressor.

## TAC AND STRAC TO BE COMBINED IN NEW UNIFIED COMMAND

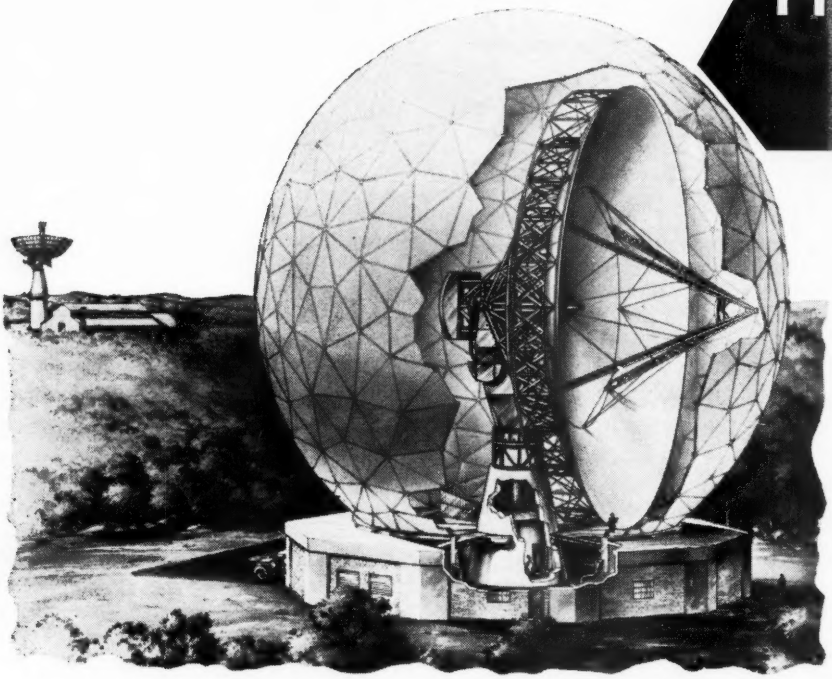
**FORCES of the Strategic Army Corps (STRAC) and the Tactical Air Command (TAC) will be combined to form a new unified command, Secretary of Defense Robert S. McNamara has announced. Commander-in-Chief of the new organization will be Lt. Gen. Paul DeWitt Adams, now Commanding General, Third U. S. Army.**

**The decision to establish the new unified command was made by the President, in accordance with the National Security Act of 1947, as amended, and was based on studies conducted by the Joint Chiefs of Staff and recommendations of the Secretary of Defense.**

**The new command is expected to be formally established before the end of the year, after completion of studies by the Joint Chiefs of Staff on detailed force structure and other arrangements. The new command will provide combat-ready land and tactical air forces which can be rapidly moved when required to augment U. S. forces already deployed or to carry out contingency missions as assigned by the Secretary of Defense or the Joint Chiefs of Staff.**

**The new unified command will develop doctrine for the integrated employment of the land and tactical air forces assigned. It will be responsible for the training necessary to weld these forces into an efficient land-air team, and will conduct regular training exercises to insure a high level of combat effectiveness and a rapid reaction capability.**

***Anticipating swift changes in aeronautics, ballistics and space realms is the managerial responsibility of***



**General B. A. Schriever**

IN THE last few years the dimensions of the military threat have changed with startling swiftness. Surprise, always a valuable principle in warfare, has now assumed primary importance. No longer do we have months to mobilize. If a surprise ICBM attack should be launched against this continent, present radar systems can guarantee no more than 15 minutes' warning. For this reason the United States must maintain forces in being that are capable of surviving such an attack and then striking back decisively.

In addition to the threat of surprise attack, we face the possibility of technological surprise. A breakthrough by our opponents in any one of a number of areas could counter some of our offensive or defensive systems. This is a serious challenge, for in the competition with Communism no prizes will be awarded for second place.

Moreover, our weapon systems may have a much shorter life than formerly. It is no longer possible to insist that development be virtually complete before a weapon enters production; it is no longer feasible to mass-produce large numbers of a given weapon system. Instead, we find ourselves buying

# AIR FORCE SYSTEMS COMMAND

a handful of highly complex weapons while continuing the development of new models. As a result, production is closely linked with development and because of the long lead times required, many phases in the acquisition cycle must be conducted concurrently.

### Logistic Requirements

FACED with these requirements in developing and producing new weapon systems, the Air Force initiated a study in 1959 to find the best way of meeting the management challenges of the space age. The result of this two year study was the creation of the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC). AFSC has been given responsibility for all phases of systems acquisition, including appropriate research, development, systems production and procurement, installation, and checkout. This is a straightforward realignment of functions and responsibilities attained through applying the "single manager" concept.

Announced by the Secretary of the Air Force on 17 March, AFSC incorporates all elements of the former Air Research and Development Command—with the exception of the basic research activities that now report directly to the Chief of Staff—as well as the systems production and procurement activities of the former Air Materiel Command. The organization of AFSC was completed in July 1961, when it acquired the Eastern, Central, and Western Contract Management Regions that were part of the former AMC. On that date it also acquired the Aerospace Technical Intelligence Center, now redesignated the Foreign Technology Division, AFSC.

The Air Force Systems Command consists of more than 70,000 military, civilian, and contract personnel and directs the spending of about 40 percent of the total Air Force budget. Specifically, the Command is designed to attain five objectives:

- to provide rapid decisions and accelerated actions on ballistic missiles and other high priority system programs;
- to insure efficient, responsible management of the military responsibilities assigned to the Air Force by the Department of Defense;
- to provide for the close integration and participation of the Army Corps of Engineers in the ballistic missile site activation task;
- to provide for effective liaison and active participation by Army, Navy, and National Aeronautics and Space Administration on projects being developed for those agencies by the Air Force; and
- to integrate foreign and domestic technology in order to improve the effectiveness of the Nation's weapon systems.

### Mission Performance

AFSC carries out its mission through its headquarters staff, five divisions—Foreign Technology, Ballistic Systems, Space Systems, Aeronautical Systems,

and Electronic Systems—and seven development and test centers. Six of these centers report directly to AFSC Headquarters at Andrews AFB; the seventh, at Rome, New York, is assigned directly to the Electronic Systems Division. In addition, AFSC administers the Armed Services Technical Information Agency (ASTIA), a central service established within the Defense Department for interchanging scientific and technical information.

Two areas are receiving new emphasis within the Headquarters and throughout the Command—procurement and foreign technology.

Procurement activities are the responsibility of DCS/Materiel and Procurement. Functionally and geographically these activities are divided into two parts. A staff of about 70 at Headquarters provides guidance on procurement policy to field activities. Approximately 130 staff personnel, assigned to Detachment 1 at Wright-Patterson AFB, Dayton, Ohio, insure that AFSC and USAF procurement policies are carried out in the field.

Production and distribution of information on foreign technology is the responsibility of DCS/Foreign Technology. This activity helps to insure that U. S. aero-space weapon systems are superior to those of our competitors and safeguards the United States against technological surprise.

The five remaining DCS's in AFSC Headquarters include DCS/Plans, responsible for identification of future aerospace systems for the Air Force; DCS/Systems, responsible for management of the acquisition of aerospace systems under streamlined operating procedures; DCS/Research and Engineering, responsible for research not oriented toward a particular system; DCS/Comptroller, responsible for the newly combined areas of programming and budgeting; and DCS/Personnel, responsible for an active program for retention of technically qualified personnel, part of the "Accent on People" program successfully initiated in the former ARDC.

### Systems Divisions

SYSTEMS development in the field is carried out by AFSC's four systems divisions. Two of them are located at Inglewood, California—the Ballistic Systems Division (BSD), and the Space Systems Division (SSD). They report to AFSC's Deputy Commander for Aerospace Systems, who maintains offices in Inglewood to insure on-the-spot decisions and rapid treatment of any problems that may arise.

Areas of particular concern to the DCAS and these two divisions are construction of operational ICBM bases, development of operational satellite systems, and development and use of test and tracking facilities for systems assigned to these divisions. In all these areas, AFSC works in cooperation with Army and Navy elements.

The construction of ICBM bases has been the responsibility of the U. S. Army Corps of Engineers Ballistic Missile Construction Office (CEBMCO). Under the new AFSC organization, by agreement with the Department of the Army, operational control of CEBMCO and its subordinate units is assigned to BSD.

Maj. Gen. A. C. Welling, U.S. Army has been named Deputy for Site Ac-

General B. A. Schriever
Commander
Air Force Systems Command

Peering through port in a hypersonic tunnel of Gas Dynamics Facility, technician observes test being made on scale model of X-15 aircraft.

tivation, BSD. His responsibilities include facility design, construction, and staff surveillance of installation and checkout for the squadrons of Atlas, Titan and Minuteman ICBMs now taking shape in steel and concrete across the country. (See "Constructing Missile Bases," April 1961 DIGEST.)

A second area in which BSD works closely with elements of the Army is the field of anti-missile defense, where the Air Force is engaging in a test program to provide targets so that the Army can evaluate its Nike-Zeus system. BSD will manage the development, engineering, and technical support functions of this test program.

The Space Systems Division, which has been given responsibility for satellite systems and other space programs, will continue to work in close cooperation with the other services and NASA. In the past, joint space programs have included Project Score (the "talking Atlas"), Echo, and Courier, all of which were orbited by the Air Force boosters; the Transit navigational satellites, which were orbited by Thor-Able-Star rockets; and NASA's Tiros weather satellite, as well as the Able and Agena-B space exploration programs. Future programs include the Advent project, which is designed to provide the United States with an effective military satellite communications system.

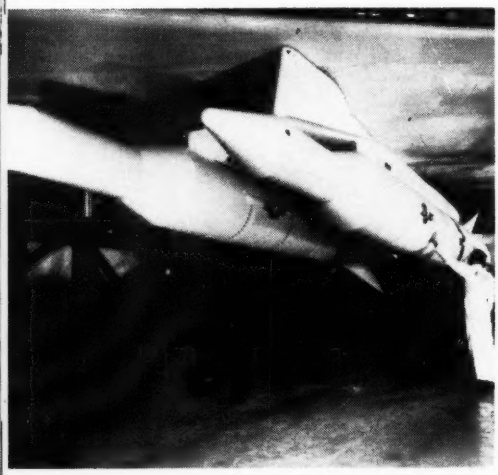
SSD also receives cooperation from the Army, Navy, and NASA which provide extensive test, tracking, and control facilities. A prime example is the support given to the Air Force Discoverer satellite program by tracking facilities of the Pacific Missile Range.

The Aeronautical Systems Division (ASD), located at Wright-Patterson AFB, is responsible for such Air Force systems as Skybolt, Dyna-Soar and the new C-141 jet transport. Its extensive research facilities are also used for various inter-service projects, such as helicopter, ground support, and air-drop programs.

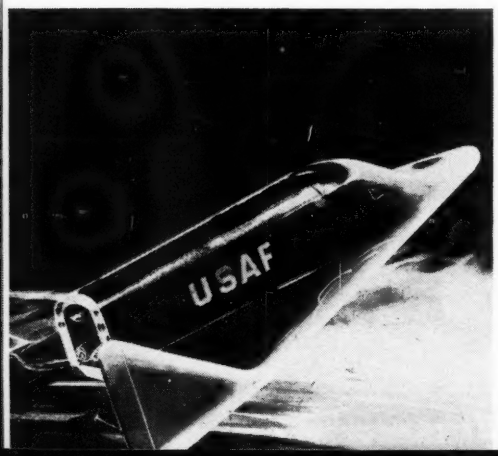
The Electronics Systems Division (ESD) manages the acquisition of a variety of command and control systems. Located at L. G. Hanscom Field, Bedford, Massachusetts, ESD also has direct control of Rome Air Development Center, New York. This Center is responsible for ground electronics. It was here that Air Force scientists received a radio signal reflected from the Echo I balloon satellite on its first pass around the earth.

Much of the work of ESD is conducted in support of NORAD and involves the development and procure-

X-15 high-altitude research aircraft here travels under own power after being cast off from its B-52 mother ship.



Test models of Skybolt are fitted above to B-52 wing mock-up. Below is concept of Dyna-Soar boost glide vehicle.




ment of such systems as the combat operations center. One recent ESD project seeks to determine how the equipment of the Air Force Sage (Semi-Automatic Ground Environment) System works with the Army's direction center for Nike batteries.

### Test Centers

AFSC's six independent development and test centers contain a large array of testing facilities that are used not only in the development of Air Force systems, but are also available to other services and contractors.

The Air Force Missile Test Center at Patrick AFB, Florida, operates the Atlantic Missile Range, which provides range support for such Army projects as the Pershing, Nike-Zeus, and the Advent communications satellite. This support includes a tracking and communications net and data recording and reduction facilities. In turn, the Army furnishes assistance in the overall Air Force range support operation by providing a Transportation Corps Terminal Unit at Port Canaveral and Signal Corps Radio Propagation Units at various range stations.

Functional tests of aircraft and flight evaluation of research vehicles such as the X-15 are conducted by the Air Force Flight Test Center at Edwards Air Force Base, California. Every kind of Army aircraft—liaison, troop and cargo carrier, helicopter—has gone through AFFTC performance, stability, and flight control tests. In addition, the Flight Test Center conducts the only test pilot school in the Air Force. To date, seven specially selected Army aviators have graduated.

The Air Proving Ground Center at Eglin AFB, Florida, carries out research and development in electronics, atmospheric and space probe projects and in the testing of air-to-surface and surface-to-air missiles. It also operates a Climatic Laboratory that is open to all military services for extreme weather testing. Able to create temperatures ranging from −65° to

plus 165°F and weather conditions ranging from desert sand storms to arctic blizzards, the Laboratory has been used for such systems as the Air Force Atlas and F-105 tactical fighter; the Navy's 901-IV6 helicopter and F-4H-1 fighter; and the Army's M48-A2E medium tank, Redstone missile, and Hawk missile.

The Air Force Special Weapons Center at Kirtland AFB, New Mexico, operates unique aerial test and engineering facilities in support of the development of nuclear weapon systems, nuclear power applications, and associated phenomena. A test program recently completed by AFSWC was a joint Army, Navy, and Air Force project aimed at developing and evaluating a proximity fuze for possible missile application. The fuzes were designed and developed by the Army Diamond Ordnance Fuze Laboratories.

During the past four years the Special Weapons Center Test Directorate has static-tested many Army special weapon systems to aid in designing transportation tiedowns in cargo aircraft. The systems tested included the Nike-Hercules, Lacrosse, Honest John, Redstone, and the Jupiter nose cone. The Directorate is also planning for tests of the Pershing missile to determine the necessary aerodynamic characteristics of the full scale Pershing warhead at high speeds.

### Wind Tunnel Operations

THE Arnold Engineering Development Center at Tullahoma, Tennessee, is the wind tunnel center of the Nation. Tests in connection with twenty-one of the Nation's top priority aerospace weapon systems have been conducted in Arnold's rocket test cells, gigantic wind tunnels, and gas dynamics facility. In the transonic, supersonic, hypersonic, hypervelocity and hyperballistic units of the von Karman Gas Dynamics Facility, it is possible to test large-scale models of aircraft, missiles, and projectiles, and in some instances, full-scale components of missiles. Tests here have contributed to such programs as Discoverer, Titan, Minuteman, Atlas, B-70, Dyna-Soar, Skybolt, Redstone, Jupiter, Pershing, Nike-Zeus, Polaris, Saturn, Tiros, and Mercury.

The Air Force Missile Development Center at Holloman AFB is located alongside the White Sands Missile Range in southern New Mexico. Holloman is unique in having at one location a variety of complex facilities such as a 35,000-foot captive missile test track; a stratosphere test chamber that simulates space conditions 40 miles from the earth and through hundreds of degrees of temperature, a balloon launching division which lofts giant polyethylene balloons, an aeromedical laboratory, an orbital mechanics division that works out abstract physical problems of putting objects into space, and a central inertial guidance test facility.

AFMDC has specialized in the "marriage" of such missiles as Firebird, Sidewinder, Falcon, and Genie with aircraft. It has helped develop two Air Force tactical surface-to-surface missiles, Matador and Mace.

Many AFMDC programs are supported by Army facilities at the neighboring White Sands Missile Range. In a series of high-altitude balloon flights undertaken to investigate the Discoverer capsule recovery system, the Army's highly sophisticated instrumentation at WSMR helped to determine the cause of the first few recovery failures in the Discoverer program.

The extensive facilities at these Centers, valued at two billion dollars, have played an essential role in the development of both military weapons and scientific space systems for the Air Force, sister services and other government agencies. These facilities, along with a force of experienced military and civilian personnel, enable the Air Force Systems Command to make increasingly important contributions to our aerospace strength.


# Guardian of Aerospace Security

**Lieutenant General Robert M. Lee**

IN THE task of national defense, no single weapon or type of weapon can accomplish the job, nor does any one service stand alone. Needed are strong, complementary weapons and forces on land, at sea and in aerospace —a combination of forces designed specifically to provide the Free World with the flexibility and varied capabilities which it requires to keep the peace.

Toward this end, the President has taken decisive action to improve the Nation's defenses in many critical areas. He has speeded up production of the Navy's Polaris submarine force, and of SAC's new Minuteman ICBM. He has provided for an increased ground and airborne alert capability with SAC's B-52 and B-47 bombers. He has increased amphibious transport to improve the speed and flexibility of the Marine Corps.

The President has requested funds to strengthen the Army's capability to move its strategic and guerrilla warfare forces swiftly to any area in the world. He has also called for additional funds for improving our North American warning and defense systems. In this area, the Air Force Air Defense Command of the North American Defense Command is directly concerned.

### NORAD Role

AEROSPACE defense of the North American continent is the full-time task of the joint-service (United States and Canadian) North American Air Defense Command (NORAD), com-

...weapons systems

...e Command—

manded by General Laurence S. Kuter, with headquarters in Colorado Springs, Colorado.

NORAD's round-the-clock air defense job requires the concentrated team effort of all major service components within the NORAD family. The Air Force Air Defense Command, which I command, is one member of the team.

Other key members of the U. S.-Canadian NORAD family are the Army Air Defense Command, commanded by Lt. Gen. Robert J. Wood; Naval Forces, CONAD, commanded by Admiral Thomas A. Ahroon; and the RCAF Air Defence Command, commanded by Air Vice Marshal W. R. MacBrien.

NORAD's business is to counter the aerospace threat to North America.

During and after World War II, there was no direct threat against the United States. We had the atomic bomb. The Soviet Union did not. We had a powerful intercontinental bomber fleet. The Soviet Union did not.

But the picture changed quickly. By the end of the '40s, the Soviet Union also had "the bomb" and a powerful intercontinental bomber force capable of delivering it. By the end of the '50s, the USSR had intercontinental missiles capable of delivering nuclear weapons against targets in the United States. The Soviet Union's major accomplishments in the field of space technology are now a matter of record. And she still has a modern and improving bomber force capable of direct attack on this country.

Assuring the aerospace security of North America is a big job—big because it requires maintaining powerful, decisive aerospace forces which can win a war if we are forced to fight; for no force can be counted upon to deter a war if it cannot win.

A variety of warning and identification systems are provided to NORAD


Delta Dart pilot is flanked by a radar guided rocket, left, and a nuclear air-to-air weapon, right.

by all the military services. Its air defense weapons include U.S. Air Force and Navy supersonic fighter interceptors, Air Force Bomarc missiles, and Army Nike missile units.

Extensive aerospace defense resources of the NORAD family are scattered throughout the United States, Canada, Greenland, and adjacent ocean expanses.

NORAD is a combat military organization already operating in its primary mission in space. It already has in operation ballistic missile early warning radars which would report instantly the approach of ballistic missiles toward North America. Information from these long-range radars is fed into the NORAD operations center at Colorado Springs. Information on the orbits of satellites, relayed from U. S. Air Force and Navy satellite tracking centers, also is transmitted automatically to the NORAD operations center.

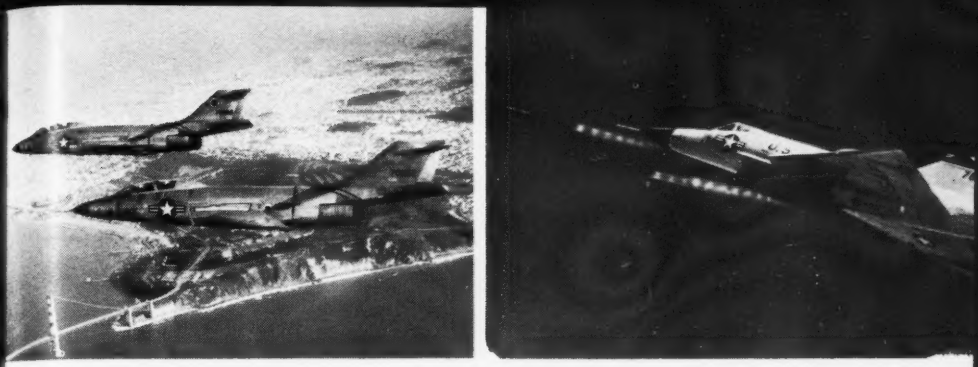
NORAD people are working closely with the armed services, with other governmental agencies, and with industry toward an early operational capability with earth-circling space surveillance, warning and identification satellites.

For example, USAF development of a Missile Detection Alarm System (MIDAS) satellite is well along. Midas is designed to detect the heat radiating from the exhaust of ICBMs immediately after launch, and to telemeter this vital information to the NORAD operations center.

The Department of Defense, and the services, are also placing highest priority on studies which are expected to lead to the early development of operational anti-ICBMs for the NORAD arsenal. The Army's Nike-Zeus is well along in development.

THE necessity for fast progress in space operations was underscored by Gen. Thomas D. White, former Chief of Staff, USAF: "I consider the total power represented by the growing Soviet aerospace strength to be perhaps the greatest threat in the history of our country. To disregard this fact would be tantamount to inviting military inferiority, to degradation of our total security position, and almost certain failure to obtain our national objectives."

Lt. Gen. Robert M. Lee
Commander,
Air Defense Command



On the alert—F-101 Voodoo, reconnaissance plane at left, and the F-102 Delta Dagger, supersonic all weather fighter interceptor, here firing Falcon missiles.

To meet the ever-growing threat to the Nation's security, the United States is moving ahead in many areas of space research, development and operations. The President has called for increased funds for a variety of satellite programs and for the development of Dyna-Soar and the X-15. The latter systems represent our first attempts to place man in the space medium with the ability to control his actions—to maneuver his vehicle, and thus be the master of his destiny in space.

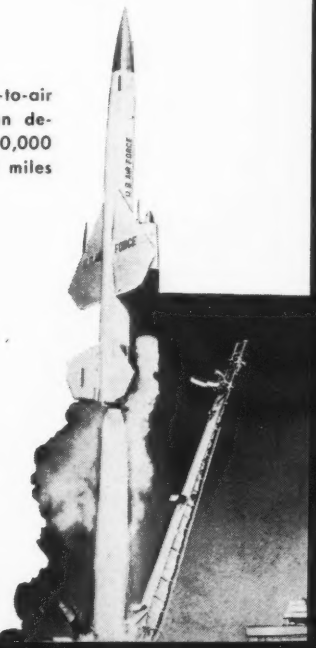
In the age beyond the missiles, it may well be the man in space who will control the future security of our Nation. The recent flights by Mercury Astronauts Alan B. Shepard, Jr., and Virgil Grissom proved not only the technical capability of the United States but also our Nation's capability for team effort.

In March, Secretary of Defense Robert S. McNamara assigned the responsibility for research, development, test and engineering of future DOD military space development programs or projects to the Air Force.

In this role, the Air Force will continue to extend the fullest cooperation to the other services and to the National Aeronautics and Space Administration. The future calls for national determination and teamwork, not only between the Department of Defense and NASA, but also by the scientific community, industry and the general public.

The road ahead is long and steep. We face dynamic competition by a society which can direct the preponderance of its resources into military channels without regard to the welfare of its civilian populace. This is a sinister threat to Free World security, but we in the aerospace defense business, in concert with industry and other United States military forces, can and must meet it. This we can do by modernizing our weapons and maintaining the ability to employ them with maximum effectiveness.

The future security of our Nation will depend upon attainment of these essential goals. This in turn will require a new measure of unswerving dedication to duty and hard work by every member of the Nation's defense team.



Bomarc B, surface-to-air guided missile, can destroy enemy at 100,000 feet altitude, 400 miles away.

*Strategic airlift capability of MATS can be both the end and the means of*

# Providing Army Globility

**Lieutenant General Joe W. Kelly**

THE U. S. Air Force Military Air Transport Service is the speed-of-mobility factor in every Defense Department equation. Whether the exponent be Army, Navy or Air Force, the degree of emphasis placed on this military airlift command furnishes a reliable barometer of the total capabilities of *all* commands and services.

Any military arm is, after all, the embodiment of force. But there can be no force without mass *and* motion. In arriving at a sufficiency of arms, then, while the quantity and quality of mass are essential considerations, mobility must be counted an equally vital factor.

### Elements of Mobility

MILITARY mobility is compounded of four ingredients: speed, range, capacity and flexibility. Some combination of the four has always been available—in the foot soldier, the horse, the military vehicle, the naval vessel and the combat aircraft. However, each has been subject to characteristic limitations, from the low speed, range and capacity of the man to the inability of the armed aircraft to carry the people and equipment necessary to its own sustained support.

Until recent years, we have been able to live with these limitations. But the severe compression of time and distance inherent in modern weapons and strategies imposes the highest premium on *global* mobility in all four dimensions. This global mobility (or "globility" as it is termed in MATS) for the Army, Navy and Air Force, is the job, the reason for being, the mission of the Military Air Transport Service. The transport aircraft, our stock-in-trade, combines speed, range, carrying capacity and the flexibility to operate almost anywhere in the world.

Strategic airlift, however, is a great deal more than a compendium of aircraft. People, too, are very much involved—aircrews, load-masters, ground crews, maintenance and supply specialists, traffic technicians, a host of experts in a multitude of specialties. There are close to 78,000 in MATS, including civilian employees and 4,000 Navy personnel.

### Technical Services

AIRCRAFT and skilled people begin to add up to airlift, but command and control through a system of Transport Control Centers, a network of worldwide bases, established operational air routes—these, too, are in-


dispensable. However, strategic airlift globility still could not exist without certain air technical services of MATS. These not only directly support our own operations, but also many operations of the Army and Navy.

**Air Weather Service,** for example, carries out specialized observational and forecasting functions for many units of both the Air Force and the Army. Its 7th Weather Squadron, in Heidelberg, Germany, provides meteorological services for the Seventh Army and the Communications Zone; the 16th Weather Squadron at Fort Monroe, Virginia, does the same for the U.S. Continental Army Command. The 1st Weather Wing at Fuchu, Japan, and 11th Weather Squadron in Alaska are examples of dual responsibility, serving both Air Force and Army units in the Far East and Alaska.

**Air Rescue Service,** although a USAF/MATS organization, serves all those in distress, American and foreign, civilians as well as military.

**Air Photographic and Charting Service,** the MATS command responsible for the Air Force's electronic geodetic and geomagnetic surveys, has always worked hand-in-glove with the Army Map Service. With the Army recently assigned the responsibility for setting up and managing a single basic geodetic and mapping service, this close cooperation in a vital defense function will continue in the future.

**Airways and Air Communications Service**—an evolution of the veteran Army Airways Communications System—was until quite recently the fourth MATS technical service. However, AACS has since become the heart of a new USAF major command, the Air Force Communications Service.

Airplanes and people, bases and routes, all organized into two transport air forces, plus three technical service commands, two specialized airlift wings, an aeromedical transport group and a small overseas air defense unit

—together they comprise the MATS family. That family, in turn, is the core of the three-part United States strategic airlift team, consisting of MATS, global airlift units of the Air Force Reserve and Air National Guard, and the Civil Reserve Air Fleet.

The entire structure is oriented toward a single basic purpose—responsiveness to the global airlift requirements of the Army, Navy and Air Force. But that responsiveness—to any degree of emergency—can exist only to the extent that MATS, the full-time active duty member of the team, is D-Day ready *every* day.

MATS units have been in full-time training for any emergency since formation in 1948. Every day, as a matter of course, it constantly exercises the global airlift system at all its widespread points. In actual emergency, it has only to step up the tempo of what it has been doing all along, without the necessity for shifting into new or unaccustomed modes of operation. For MATS, in effect, the only operational difference between war and peace is one of degree, not of kind.

But airlift cannot exist in a vacuum, nor—as with any dynamic force—can it be statically stored in a warehouse or on an airfield. As former Army Secretary Brucker stated before the National Military Airlift Subcommittee of the House of Representatives in March 1960, airlift is not an end in itself, but simply a means to the end of projecting our national military power promptly to any part of the world.

It follows that MATS cannot train in airlift without actually flying strategic airlift missions *for* the very forces it is committed to support if the chips go down.

For this reason, MATS daily training program is a complex of interrelationships. It encompasses joint exercises, mobility tests, special airlift missions, logistical support and medical airlift with and for—among others—Strategic Air Command; U.S. Army in Alaska; Tactical Air Command; U.S. Army in Europe; Continental Army Command; U.S. Army in the Pacific; the Commanders-in-Chief, Atlantic and Pacific; U.S. Naval Support Force, Antarctica; Air Force Systems and Logistics Commands; U.S. Air Forces in Europe and the Pacific; National Aeronautics and Space Administration; and the Department of State.

In addition, MATS has been called upon almost constantly since 1948 to operate emergency airlifts for cold war, diplomatic and humanitarian purposes. Almost thirty of these come to mind, from the Berlin Airlift of 1948-49 to MATS participation in the year-old Congo airlift under United Nations auspices.

The Amigos airlift to earthquake-torn Chile in May-June 1960 was a clear example of the rapid projection of United States humanitarian aid through the medium of strategic airlift. MATS and the Army joined hands to send 79 missions over the 4,500-mile route to Santiago and Puerto Montt, airlifting more than 1,000 medical personnel and almost 900 tons of clothing, food, helicopters and medical supplies—including

**Lieutenant General Joe W. Kelly**
**Commander**
**Military Air Transport Service**

two complete Army field hospitals—to the scene of the disaster.

### Support for Army

WHILE MATS is acutely aware of its extensive responsibilities to SAC, TAC, other Air Force commands, and many operational elements of the Navy and Marine Corps, we are, if anything, just a bit more sensitive to the needs of the United States Army, whose rapid globility is so entirely dependent upon us.

It would seem fitting, in that case, to pass lightly over our standby runway alert force in support of SAC war plans; strategic airlift for the Composite Air Strike Forces of TAC; airlift of test and operational missiles of all services; support for the Navy's Antarctic Operation Deep Freeze; and the numerous other demands on existing airlift capacity—and, for the purposes of this article, to concentrate primarily on MATS airlift as the instrument of Army strategic mobility.

In order to keep the entire global airlift system staffed, equipped and geared for rapid acceleration to a high emergency operational tempo, MATS flies realistic training missions every day of the year. Flying time amounts to between 50 and 60 percent of the emergency rate, so that MATS can double its working hours if needed to meet the demands.

Flying so many daily hours in normal times naturally produces airlift—which is not actually airlift, nor even a suitable training medium, unless it is used. There is, as it happens, more than ample use for this training airlift—in special missions, test exercises, and the air logistical support of our overseas forces and base complexes. In the latter category, MATS depends upon augmentation by U. S commercial airlines which are members of the Civil Reserve Air Fleet. Flying Army, Navy and Air Force members and military equipment under contract, the carriers not only supplement their revenues, but also receive valuable training for their wartime logistics assignments.

In fiscal 1960, MATS flew 70,610,000 ton-miles of special assignment airlift for the Army, and—with the help of the CRAF-committed carriers—255,150,000 ton-miles of port-to-port Army airlift. Included were almost 84 million pounds of cargo (of which the Pershing and Redstone missiles were a part) and mail, and very close to 400,000 personnel. In addition, 7700 Department of the Army patients were airlifted by the MATS domestic medical airlift system during the same year.

Among the Army cargo was a component of the Nike-Zeus missile tracking system, airlifted from Chicago to Tulsa in January 1960, and, a few months later, to Ascension Island in the South Atlantic. The component cleared the center wing section of the giant C-133 Cargomaster by a scant 3/16ths of an inch and—at 27 tons—was the heaviest single item ever airlifted.

### Serving Army Needs

FROM July 1957, when it was assigned the heavy troop carrier mission by the Air Force, MATS has been conducting joint training exercises with Army airborne elements, programming 1100 flying hours a month for this purpose. However, it is certainly no secret that the Army has been very much concerned about the availability of sufficient strategic airlift capability to satisfy its particular emergency war requirements.

In July 1958, President Eisenhower directed the Department of Defense to make a definitive study of MATS and to recommend specific courses of action to improve our national airlift capacity. The DOD study on the role of MATS in peace and war, containing courses of action approved by the President, was published in December; early in January 1960 the Secretary of the Air Force convened a committee of prominent industrialists (the

Reed Committee) to recommend implementing actions. Their report, dated April 1960, included recommendations that MATS training be more closely aligned with its combat mission; that more routine logistical airlift be turned over to commercial carriers as their capabilities increased; and that MATS capacity thus vacated be utilized in increased joint air mobility training. This training, the report said, should place major emphasis on the air movement of personnel and equipment from CONUS to oversea areas.

Meanwhile, in March 1960, the Chiefs of Staff of the Air Force and the Army had reached an agreement on quantitative Army requirements for airlift within specified time frames. The White-Lemnitzer Agreement pointed a goal rather than implying that the specified volume of time-phased airlift was actually available at the moment. It was, nonetheless, a meaningful first step in that it clearly delineated and focused attention on the magnitude of the requirement.

During that same month, MATS ran a full-scale test of its war-readiness posture by accelerating the entire strategic airlift force of 450 aircraft to about the daily flying rate necessary to fulfill emergency demands. The test, Big Slam, was sustained for 15 days. At the same time, half of the aircraft and flying hours generated by the test were utilized for Exercise Big Slam/ Puerto Pine. In this exercise conducted by MATS and Continental Army Command, 21,000 Strategic Army Corps troops and 11,000 tons of battle equipment were airlifted from 14 Zone of Interior on-load bases to two staging areas in Puerto Rico, and thence back to their home bases.

During the 15-day exercise 225 aircraft flew 24,640 hours for more than 2500 sorties, through the worst offshore weather ever encountered, without a single accident.

Despite its magnitude, however, the exercise patently lacked the realistic tests of global distance and a balanced force ready for combat upon landing. Had the balanced force been moved, something like 600 additional sorties for equipment and supplies would have been required, closure time would have been increased from 12 to 16 days, and the distance would still have been less than global.

Since the military airlift system meshed with STRAC forces without a hitch and the expansion proved entirely workable, the deficiency was principally chargeable to the aging MATS aircraft, with their relatively low speed and short range.

The "qualified success" of the exercise prompted the National Military Airlift Subcommittee of the House of Representatives to urge certain actions, among them: (1) appropriation of $50 million to begin development of an uncompromised long-range, turbine-powered cargo aircraft; (2) immediate interim procurement of 100 off-the-shelf aircraft—50 jet and 50 turboprop; (3) increased emphasis on limited war plans; and (4) greater attention to the planning and execution of realistic military airlift training exercises. In essence, the Rivers and the Reed Committees agreed on airlift modernization and combat training.

### Modernization Moves

THE 86th Congress—Second Session did, in fact, appropriate the development money, as well as procurement funds for the turboprop aircraft —the C-130E, an extended-range model of the Lockheed Hercules which the Army had supported as meeting its specialized needs.

Procurement of C-135 jet Stratolifters and C-130Es was speeded up at the direction of President Kennedy early in 1961. Shortly afterward, the White House announced inception of a billion dollar program by Lockheed for development and production of an idealized cargo and troop aircraft, powered by turbofan jet engines. The first to be designed specifically for the global airlift mission, the C-141


Strategic airlift aircraft in MATS inventory can be diverted quickly to meet emergency anywhere in world.

is expected to begin entering the inventory in 1965.

While these two interim aircraft and the ultimate C-141 greatly increase the ability of MATS to fulfill Army globility requirements, as well as numerous others, MATS is not sitting back and waiting for the future. Rather, it is taking every possible step to improve responsiveness to Army emergency needs. Among these steps has been an expanded program of joint MATS/Army exercises. In many, TAC and certain Reserve Forces also participate.

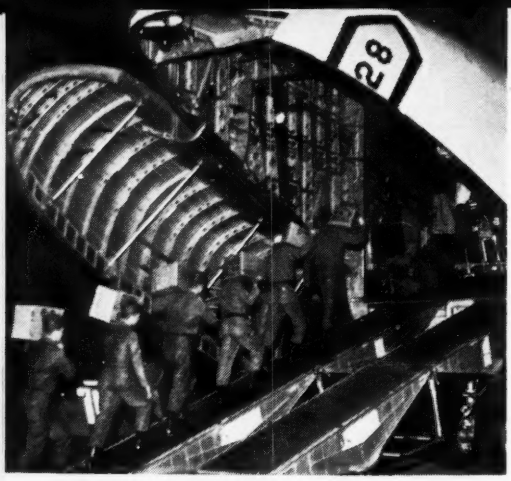
In 1960, for example, the 13,200 hours normally programmed for joint Army mobility training grew to well over 38,000 hours, during which more than 4,000 individual sorties airlifted in excess of 27,000 tons of cargo and 52,000 personnel. Such exercises and special operations included Big Slam/Puerto Pine, Little Bear, Bright Star/Pine Cone III, Columbia Cliff, Elk Horn, South Wind, Bright Sword, and unprogrammed airlift missions to the Far East.

### Further Experience

THE year 1961 promises to continue and expand the trend. January saw the airlift of 2000 STRAC troops and 120 tons of equipment to Alaska for Operation Willow Freeze. In February there was Long Pass, an airlift of 7400 miles from the Zone of Interior to the Clark/Stotsenberg maneuver area in the Philippines, involving CINCPAC, MATS, USCONARC, TAC and USARPAC. Certainly the distance defect of Big Slam was corrected in Long Pass, and the airlifted elements of the Army made up a balanced force that went directly into simulated combat upon landing.

However, the forces airlifted from the United States were relatively small —1460 personnel of CONARC and TAC and 1300 tons of equipment. With the more modern aircraft programmed, MATS could have accomplished the same results in about half the time with 50 percent fewer aircraft. Or, conversely, a far larger force could have been moved in the same closure time, which was well within the 48-hour objective specified by the Army.

As the most practical compromise between the unbalanced mass of Big Slam and the extreme range of Long Pass, Operation Long Thrust scheduled in May called for 6000 troops of three STRAC battle groups, augmenting TAC forces, and 760 Army vehicles (from trailers and howitzers to light aircraft and an Honest John rocket launcher) to be moved from the ZI to Germany, where they would con-



Supplies to aid stricken area, above, or United Nations troops bound for the Congo, below, are all in day's work.

Symbolic of U. S. determination to stand by friends was the airlift that brought fuel and food during Berlin blockade.

duct battle exercises with NATO defense forces, then be airlifted back to the United States.

Although Long Thrust was cancelled on orders from the Joint Chiefs of Staff, it provided additional joint planning experience for the Army and Air Force—and guaranteed that MATS and STRAC were both fully primed for the very contingencies that occasioned the cancellation.

### Forward Steps

I CAN only feel—and I am confident that the Army agrees—that we have taken some big steps toward achieving our mutual goals in contingency planning. A MATS Liaison Officer regularly sits in on the meetings of the Joint Plans Development Group at Fort Bragg, North Carolina, where he actively participates with USCONARC and TAC members in planning the airlift for Army war and contingency plans.

As to the future, there is every indication that MATS will receive additional funds for FY 1962 exercises, of which more than 90 percent will be allocated to MATS/Army/TAC strategic mobility exercises.

United States Army globility has progressed in almost quantum jumps in the eighteen months since the White-Lemnitzer Agreement. It is clearly destined to progress faster and farther in the months and years ahead, particularly as newer and more efficient aircraft enter the MATS inventory in large numbers—thus increasing our ability to meet all the strategic airlift requirements of the Army *within the time limits specified.*

Broad spectrum deterrence, the only practical means of preventing war *and* of defeating hostile forces if necessary, demands a sensitive appreciation of the dynamics of force and the urgencies of "real time." Both are dependent upon *mass in motion in time.* That, in essence, is the goal of rapid Army globility through MATS strategic airlift—the end and the means.

*A force of 19,000 military, 140,000 civilians performs vital transportation, procurement, supply functions of the*

# Air Force Logistics Command

**General William F. McKee**

TO INSURE that Air Force combat units throughout the world are equipped for instant action in event of any kind of war—that is the mission of the Air Force Logistics Command (AFLC). In performing this mission, the Command cooperates closely with the Army. This cooperation has expanded in recent months as emphasis has increased on limited and "sub-limited" wars.

The Air Force Logistics Command is a recent outgrowth of the Air Materiel Command. It has abandoned

time-hallowed methods in favor of modern techniques for accomplishing its tasks. Supplies and equipment today are moved to the field with ever-faster speed. Flexibility is the key word, since today's logistic systems must meet the need for diverse employment of various weapon systems, and must be responsive to changes.

Up to a few years ago, our Nation's military strategy was based on our overwhelming military and industrial might which would become available months after hostilities started. We were prepared to accept shortages of equipment and adverse tides during early stages of conflict. Months later, a great stream of military products flowing from factories operating around the clock would turn the tide of war in favor of the United States.

In former days it was not unusual for up to 15 percent of our aircraft to be out of commission for lack of parts at their oversea stations—or for a supply officer overseas not to receive a needed part for six weeks or perhaps three months. An overwhelming mass of aircraft was finally on hand overseas to assure victory anyway.

However, development of thermonuclear missiles has changed all that. It is evident that much of our industrial power could be wiped out early in such a war. It is further evident that the Air Force must be prepared to strike decisive blows with what it has on hand, should such a war begin.

Changes became necessary in our concepts of logistics. Squadrons must constantly be equipped with the latest weapons—and these must be ready for immediate use.

Readiness is the concept on which AFLC's logistic principles are based. Today, Air Force squadrons are in a far better state of constant readiness than ever before.

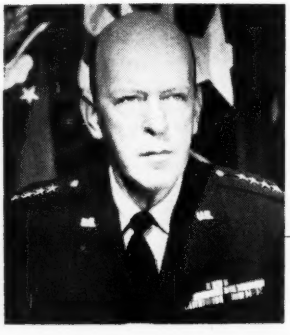
Behind this is the story of the organization, the activities and the people who man the various elements of Air Force Logistics Command. The first logistics speed-up came with the establishment of LOGAIR in 1954.

LOGAIR is the designation of the cargo airlift system operated by AFLC between 88 bases in the United States. This includes a great deal of cargo being flown for the Army.

Materiel goes to the aerial Ports of Embarkation at Dover AFB and Travis AFB. Airlift overseas is performed by the Military Air Transport Service (MATS). Normally, all LOGAIR flights are performed by commercial carriers on a contract basis. Today the cargo carried by LOGAIR in a single month is greater than its entire first year airlift of 13,380 tons. The total for fiscal year 1961 was 172,000 tons.

Transportation is just one of AFLC's major activities. Other main functions of the Command are procurement, supply and maintenance—often in close cooperation with the Army.

AFLC is responsible for procurement of initial spares for all weapons, including determining the requirements, budgeting and funding for initial spares included in contracts for new weapons awarded by Air Force Systems Command.



General William F. McKee
Commander,
Air Force Logistics Command

AFLC procurement amounts to more than three billion dollars annually, of which about a third is for replenishment spares. In addition, it has surveillance over $800,000,000 worth of buying accomplished locally by bases of other commands.

### Supply Program

AFLC operates a world-wide supply system for the entire Air Force. Under its concept of selective management, Hi-Valu and Lo-Valu programs aid materially in managing the material resources of the Air Force.

Hi-Valu items are bought conservatively and controlled precisely. They represent under three per cent of all items bought for weapon support, but involve over 50 per cent of the cost. Hi-Valu items are identified by special tags, so that all who handle them are aware of their value and provide careful and speedy delivery.

Lo-Valu items are subject to more liberal control and simplified procedures, as they cost less than $10 each and have annual issues of less than $25,000.

In both its procurement and supply activities, AFLC works closely with the Army. Establishment by the Department of Defense of several Single Managers has brought the two services much closer together for logistics purposes. Under the Army are the Single Managers for subsistence, clothing and textiles, general supplies, automotive supplies and construction supplies.

Within the next two or three years, up to 50 per cent of the logistics support of the entire Air Force will be affected by the rapidly accelerating Single Manager and related programs.

AFLC also cooperates closely with the Army in cataloging activities involving interservice agreements on identification data, manufacturers' data, and technical data. AFLC's cataloging program involves 2,013,158 active supply items and 2,500,000 manufacturers' parts numbers.

### Interservice Cooperation

SINCE the establishment of the Consolidated Surplus Sales Program by the Department of Defense in January of this year, the three military services have been selling large amounts of each other's surplus property. For example, the Army sells for a number of Air Force activities and in return the Air Force includes Army property in its sales.

Also, the Air Force has expanded its National Bidders Control Center at Kelly Air Force Base, Texas, to provide a central bidders list, with central reproduction and distribution of surplus sales catalogs for all the services. (See "Surplus Property Disposal," September 1961 DIGEST.)

AFLC employs about 56,000 persons in its maintenance depots. These depots process approximately three million aircraft and engine components annually, including modernization and overhaul of about 9,000 aircraft and 35,000 engines.

Maintenance also is a two-way street for Air Force and Army cooperation. Under a cross-service agreement, AFLC provides maintenance support on the APN-6A radar for the Army Signal Corps at nine sites.

AFLC maintenance support also is furnished the Army in repair and repacking of parachutes, inspection and repair of aircraft jacks, Technical Order compliance on certain H-13 components, and chemical analysis of paint and petroleum products. All these activities are performed at Middletown Air Materiel Area, Pennsylvania.

In return, the Army assists the Air Force. This aid includes repair and calibration of indicators for the Air Force at Rock Island Arsenal, Illinois, and development of a prototype for the Air Force's T-53 engine at Amarillo, Texas.

Another important activity of AFLC is management of the Air Force materiel portion of the Military Assistance Program. This includes both the grant aid portion and the Mutual

Security Military Sales (MSMS). The grant aid portion involves about $500,000,000 a year, of which over 40 per cent goes into new procurement in the United States and abroad. The MSMS program involves an estimated $100,000,000 annually in sales by the Air Force to friendly foreign countries. AFLC manages these programs for the benefit of over 50 nations throughout the world.

### High Speed Support

TO speed up its varied operations, the Air Force in 1955 pioneered in developing and introducing the transceiver system involving the large-scale transfer of information in punch-card form.

Requisitioning of supplies was revolutionized by the transceiver system. Instead of sending requisitions back to the United States by mail, the supply officer at an overseas base today uses punch cards transmitted electronically to depots in the United States.

Transceivers and high-speed transportation have reduced the time needed for receipt of orders overseas from weeks or months to a week or so. Today, AFLC's average for oversea unit support is less than nine days.

Another innovation in overseas supply is the direct support concept. As late as the Korean War, squadrons had been supplied through stockpiling of materiel at overseas depots—a slow, cumbersome, uneconomical method. Pipeline time was lengthy and surface transportation was used for shipment of nearly all materiel, so that huge stockpiles were required.

Direct support was the Air Force's answer to this problem. Direct requisitioning of supplies from continental U. S. depots began as a test operation in support of SAC units at Ramey AFB, Puerto Rico. Later Alaska and Northeast areas were added. As a result, major depots in North Africa, France, England, Japan and the Philippines were discontinued. All Air Force activities today requisition and receive supplies directly from continental U. S. depots.

Another innovation was the use of flyaway kits, containing parts and equipment needed by a squadron for 30 days. As parts are needed, they are obtained from the kit, and replacements are ordered by transceiver from the United States. Upon delivery, they are put into the kit to maintain the required level.

### Improved Management

PARALLEL with these activities in recent years, AFLC has developed better management techniques. Management by exception has been promoted

IN THE United States AFLC maintains nine Air Materiel Areas (AMAs), one separate depot, and three specialized activities:

- Warner Robins AMA at Robins AFB, Ga.
- Rome AMA, Griffiss AFB, N. Y.
- Sacramento AMA, McClellan AFB, Calif.
- San Bernardino AMA, Norton AFB, Calif.
- San Antonio AMA, Kelly AFB, Tex.
- Oklahoma City AMA, Tinker AFB, Okla.
- Ogden AMA, Hill AFB, Utah.
- Mobile AMA, Brookley AFB, Ala.
- Middletown AMA, Olmsted AFB, Pa.
- Dayton Air Force Depot, Gentile AF Station, Dayton, Ohio.
- 3079th Aviation Depot Wing, Wright-Patterson AFB, Ohio.
- 2709th Air Force Vehicle Control Group, Memphis, Tenn.
- 2704th Air Force Aircraft Storage and Disposition Group, Davis-Monthan AFB, Ariz.

AFLC has two overseas operations:

- Air Materiel Force, European Area, Chateauroux Air Station, France.
- Air Materiel Force, Pacific Area, Tachikawa Air Base, Honshu, Japan.


Conversion of 35 test F-106 Interceptors to combat configuration gave Air Force almost two entire squadrons.

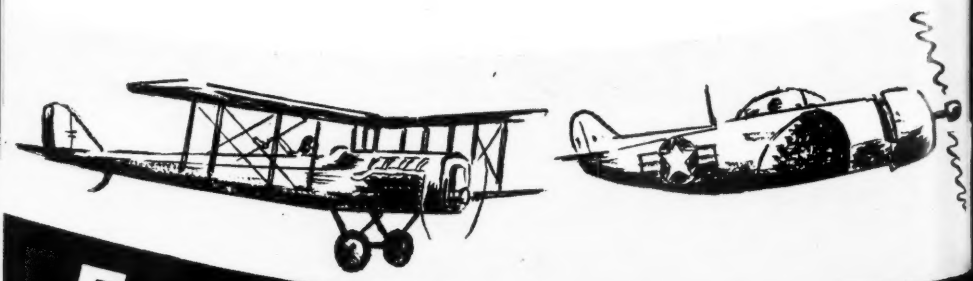
by extensive use of electronic data processing equipment. Problems in need of management attention are identified mechanically, freeing inventory managers from the need to review data on thousands of items.

Electronic equipment, including 19 large-scale computers, also is used for computing requirements, distribution, taking inventory, cataloging, and other functions. AFLC is the world's largest user of automatic data processing equipment of all types.

To accomplish the functions cited here, AFLC has 159,000 people, 19,000 military and 140,000 civilians at 12 major locations in United States, and two overseas. (*See box.*)

In the months and years to come, it is a foregone conclusion that the era of Air Force-Army cooperation will continue to become more important, to the mutual benefit of each service and of the Nation.

***The dynamic development of the U. S. Air Force traces on ascending curve***



# From Flying Machine to

WITHIN the memory of many a person living today, the first heavier-than-air flight — in which Orville Wright at Kitty Hawk, North Carolina, on 17 December 1903 soared a distance of 120 feet in 12 seconds — ushered in the air age.

Since then the world has witnessed the evolution of the first crude airplane — a sort of box-kite fitted out with a home-made engine — into the sleek, swifter-than-sound jet of today. The importance of aircraft, both militarily and commercially, has increased phenomenally, while moving with fantastic swiftness into the era of missiles and flights into space itself.

The history of the United States Air Force is synonymous with that of the entire air age. Officially the history of the Air Force starts with the establishment in 1907 of the Aeronautical Division in the Office of the Chief Signal Officer.

But even earlier, in the year 1898, $50,000 was allotted for aviation research, of which $25,000 went to support S. P. Langley's early attempts to build a flying machine. The fact that his test aircraft crashed did not kill interest in aviation, for work continued on lighter-than-air craft and the Signal Corps maintained its interest in heavier-than-air experiments.

From these beginnings, the Air Force not only has grown along with the air-age — it has contributed materially to bringing that age into being, through research and development, training, and development of new concepts.

Historic dates in Air Force evolution and development include:

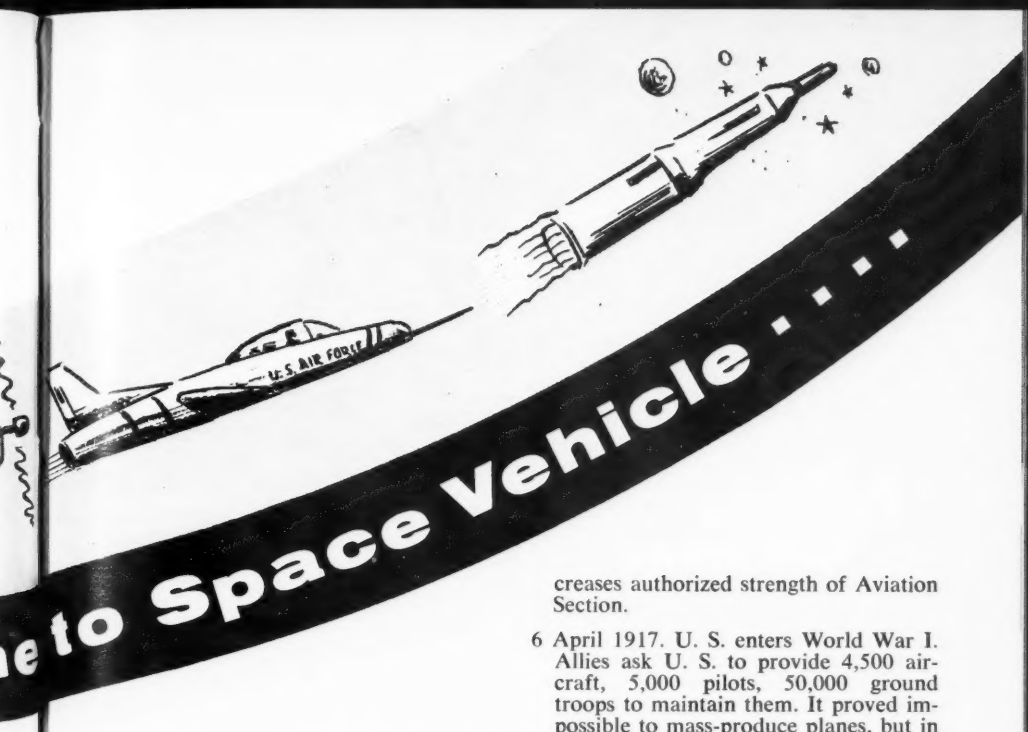
1 August 1907. Aeronautical Division, U. S. Army Signal Corps established with one officer and two enlisted men "to study the flying machine and the possibility of adapting it to military purposes."

8 February 1908. Army accepts Wright Brothers' bid to build military aircraft according to Signal Corps specifications.

17 September 1908. Lt. Thomas E. Selfridge, first military casualty, killed on a test flight at Fort Myer, Virginia.

2 August 1909. Army acquires first plane from Wright Brothers. It remained aloft 80 minutes, averaged over 42 m.p.h.

3 March 1911. Congress voted $125,000 for aeronautical development. Aviation School started at College Park, Maryland. Experiments started in aerial photography, armament and equipment.




1912. Army accepts new Wright plane and a Curtiss. Army Air Service grows to 14 flying officers, 39 enlisted men, with 9 planes housed at College Park, other hangars at San Antonio and Fort Leavenworth.

1913. First aircraft with propellers in front instead of behind wings acquired. First aerial mapping accomplished.

2 March 1913. Congress provides for 35 percent flying pay, sets U.S. aviator strength at 30 officers.

5 March 1913. First Aero Squadron, first U.S. military organization, activated at Texas City, Texas.

1914. Aviation Section established under Signal Corps; 60 officers and 260 enlisted men authorized. First air-ground communications successfully accomplished by radio-telegraphy.

15 March 1916. First Aero Squadron, (11 officers, 82 enlisted men, one civilian mechanic) with 8 of 13 planes then owned by Army, ordered to join punitive expedition against bandit leader Villa. By 22 April six planes had been abandoned or destroyed, remaining two condemned. Congress appropriates $500,000 to strengthen Aviation Section.

3 June 1916. National Defense Act increases authorized strength of Aviation Section.

6 April 1917. U. S. enters World War I. Allies ask U. S. to provide 4,500 aircraft, 5,000 pilots, 50,000 ground troops to maintain them. It proved impossible to mass-produce planes, but in first year, 11,000 12-cylinder Liberty engines were turned out.

May 1918. In wartime reorganization, Air Service was established as a combat arm of the Army.

September 1918. General William "Billy" Mitchell organizes 1481-plane strike during Saint-Mihiel offensive.

11 November 1918. By war's end, Army aviators had made 13,000 pursuit and 6,600 observation flights, dropped 275,000 pounds of explosives during 215 bombing missions.

1920. Army planes complete first round-trip flight from New York to Nome, Alaska, from July to October.

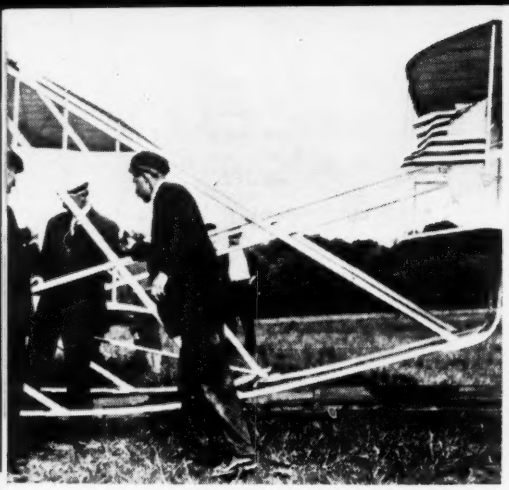
4 June 1920. Reorganization Act creates Army Air Service "as a separate and coordinate branch of the line of the Army."

1921. General "Billy" Mitchell leads airmen armed with 600-pound bombs in sinking captured German destroyer and light cruiser off the Virginia capes, and later battleship *Ostfriesland.*

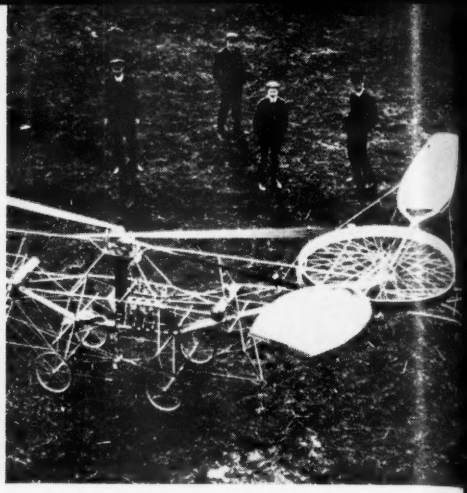
1922. Lt. James H. Doolittle flies across the continent in 21 hours and 20 minutes.

1923. Experiments conducted in mid-air fueling.

1924. Four Army fliers make first around-



Wright Brothers success in building first military plane won them $5,000 bonus.



Early French helicopter built by Paul Cornu flew for 22 seconds in 1907.

the-world flight in 363 flying hours over 175 days.

1926. Air Commerce Act adopted, establishing legislative cornerstone for development of civil aviation.

July 1926. Air Service redesignated Army Air Corps. Good-will missions sent to various Latin American countries.

21 May 1927. Charles A. Lindbergh, Captain, U.S. Army Reserve, makes solo flight, New York to Paris.

1 January 1929. Major Carl Spaatz and Captain Ira C. Eaker in *Question Mark* remain airborne 151 hours with help of mid-air refuelling.

The 1930's. Important developments during this decade include midwing monoplanes with retractable landing gear, B-17 all-metal bombers; photographic reconnaissance tests to determine practicability of defending Alaska by air; establishment in 1935 of GHQ Air Force within Army Air Corps structure.

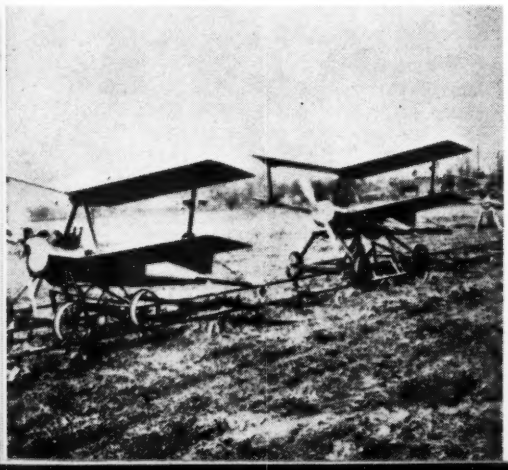
March 1935. GHQ Air Force created as combat arm for Army aviation, marking step toward autonomy within Army.

16 May 1940. After outbreak of war in Europe, President Roosevelt calls for building 50,000 war planes, training fliers as part of expanded aviation program.

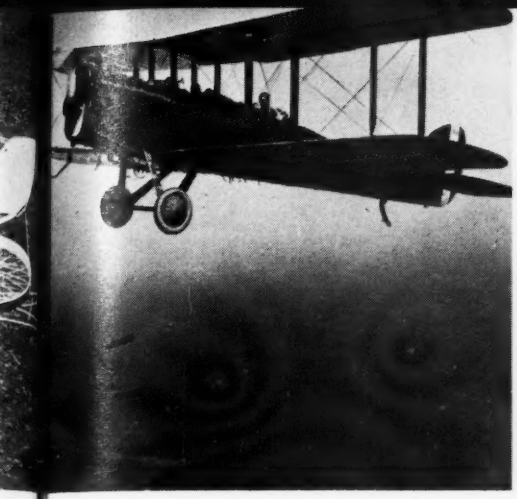
20 June 1941. Army Air Forces established. Maj. Gen. H. H. Arnold named first AAF chief.

1941-45. Army Air Corps and GHQ Air Force become major components of newly created Army Air Forces (AAF), one of three coequal semiautonomous branches of the Army (others are Army Ground Forces and Army Serv-

Work on pilotless aircraft carrying explosives similar to V-1, started in 1916.



Before U. S. entered World War I, many Americans served in Lafayette Escadrille.



Forerunner of the huge Fortress types, DeHavilland DH-4 practices bomb drop.

Mechanics had to be fast on feet to avoid spinning prop blades.

ice Forces). By July 1944 AAF attained strength of 243 combat groups, 2,411,000 men, some 80,000 aircraft.

Both strategic and tactical aviation played large roles. Airplane also created new method of attack as paratroopers were employed for first time in warfare. At American insistence, daylight precision bombing was introduced, with bombers escorted by long-range fighters. In Europe, German production of fuel and lubricants was seriously damaged; the *Luftwaffe* was practically destroyed. Concept of tactical air-ground operations was first brought into full effect during North African campaign. By time of invasion, 6 June 1944, Allies had complete air superiority. Air power both assisted ground armies and wrecked German industry. By April 1945 U. S. Strategic Air Forces in Europe had run out of major targets.

In the Pacific, the Japanese had to be contained until sufficient forces could be built up for offensive action. Aviation made important contributions in Burma, China, Attu and Kiska in the Aleutian chain. Air power helped turn the Japanese tide at Guadalcanal and New Guinea. From Marianas bases, tremendous raids devastated cities and industries of the Japanese homeland. Atomic bombs dropped on Hiroshima and Nagasaki in August 1945 helped convince the Japanese that further resistance would be futile.

World War II brought many technological advances — self sealing gasoline tanks; greater aircraft maneuverability, range, visibility; planes became larger and swifter — a trend that has continued since.

Pigeons were sometimes used to carry messages before military use of radio.

Between the two World Wars, advances were made in aerial tactical techniques.

Record flight of "Question Mark," 1929, proved value of midair refueling.

World War II Superfortresses shower down tons of bombs in daylight raid.

21 March 1946. Three operational commands—Strategic Air Command, Tactical Air Command, Air Defense Command—established.

1946. This year marked conversion to operational jet aircraft by first large order for jet-powered F-80. Concept of massive retaliation pointed up by successful flight of B-36.

18 September 1947. National Security Act establishes Department of Air Force as separate military service on same level with Army and Navy. W. Stuart Symington named first Secretary of the Air Force.

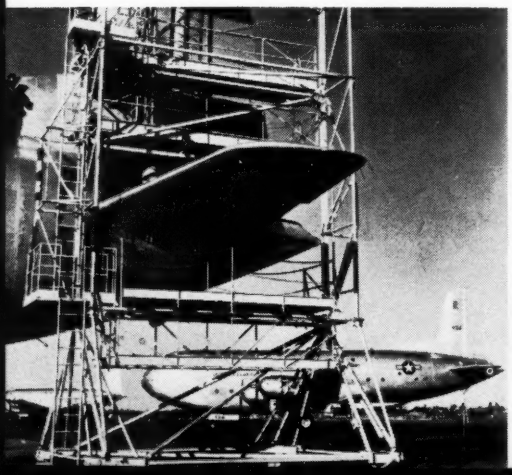
14 October 1947. Capt. Charles Yeager penetrates sonic barrier in rocket-propelled XS-1. Soon after came first B-47 medium jet bomber, the F-86, and the C-124, largest cargo transport yet produced.

June 1948. Soviet land blockade of Berlin results in swift action by USAF in Operation Vittles — the Berlin Airlift. Daily haul often reaches more than 6,000 tons. By 12 May 1949 Soviets lift blockade.

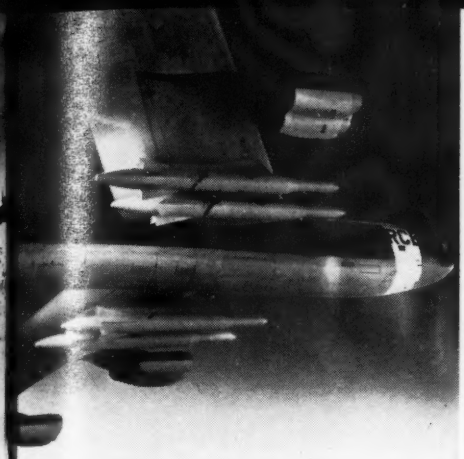
2 March 1949. Round-the-world flight of B-50 *Lucky Lady II* dramatizes possibilities of in-flight refueling.

25 June 1950. North Koreans invade Republic of Korea. Air Force jet fighters establish 14-to-1 ratio of kills over Soviet-built MIGs. Gigantic eight-engine bombers make first flights. Jet fighter-bombers also appear in combat. War brings versatile helicopter into prominence.

During Korean War, crewmen service C-124 carrying personnel and supplies.



A modern B-58 Hustler is refueled during supersonic flight from Stratotanker.



First air-launched ballistic missile, hypersonic Skybolt, under Stratofortress wing.

Thunderbirds, famed precision flying team, show skill in acrobatic maneuver.

The 1950's. Besides participation in Korean War, decade brings organizational refinements, including establishment of Air Research and Development Command, build-up of forces of North Atlantic Treaty Organization, establishment of numerous forward bases (Morocco, Greenland, Spain, Iceland, Denmark, Portugal), and finally the beginnings of missile and space age.

27 July 1954. U. S. Air Force Academy established.

August 1957. Distant Early Warning (DEW) Line became operational. Semiautomatic Ground Environment (SAGE) system developed.

February 1959. Series of Discoverer flights begins, marking first steps in guiding and propelling vehicles in space and bringing them back from orbit.

May 1960. Midas satellite placed in orbit. Work proceeds on Samos. Research and development also continues on pioneer manned space vehicle, X-15.

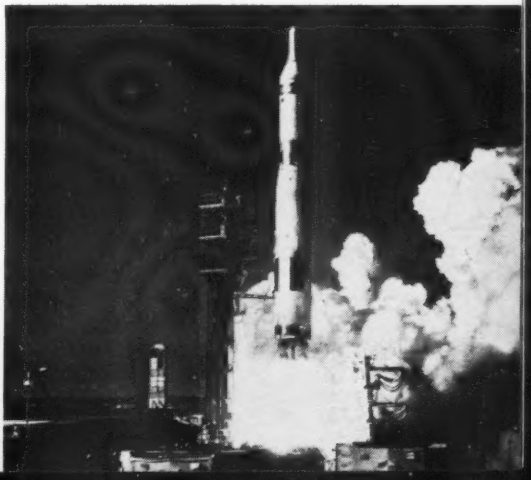
March 1961. Air Force assigned responsibility for research, development, test and engineering of future military space program and operation of military reconnaissance satellites. Air Research and Development Command becomes Air Force Systems Command, responsible for weapons from concept to delivery.

May 1961. Titan missile launched from a deep silo, the first ICBM to be fired from below earth's surface.

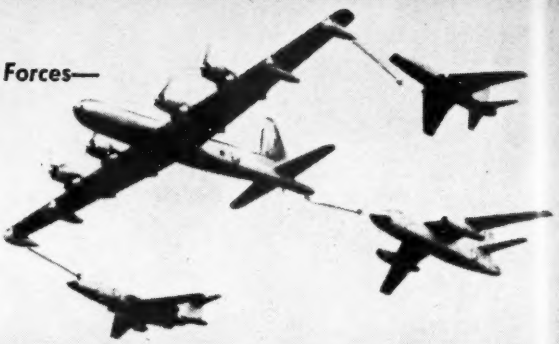
(For recent trends in Air Force aircraft, weapons and missilery, see other articles in this issue.)

High degree of mobility for ground troops is provided by cargo aircraft.

Portent of future is launch of a Titan at Cape Canaveral in January 1961.



*Supporting NATO and U. S. Forces—*



# United States Air Forces in Europe

IN THE Congo, C-130 transport crews wing in with fresh contingents of United Nations security forces and return to European, Asian and African nations with combat troops who have served six months or more in the African republic.

Near Sembach, Germany, a young Air Policeman and his sentry dog guard a concealed tactical missile site.

At Wheelus Air Base, Libya, a sergeant radios information on a practice strafing run by an F-105 tactical fighter.

On the island of Majorca, off Spain's Mediterranean coast, a radar operator directs a practice interception of an unseen aircraft by an Air Force F-102.

At Sculthorpe, England, cooks with the 47th Bomb Wing turn out hot cakes and fried eggs for the night shift of jet engine mechanics.

Outside Adana, Turkey, an NCO dashes from his trailer-home on the base perimeter to an F-100 tactical fighter during a practice alert.

At Tempelhof Air Base, in Berlin, a USAF captain meets with Soviet, French, and British members of the Berlin Air Safety Center Committee.

Similar routine, practice, and professional activities are taking place in the countries and possessions of French Moroccan, Dutch, Greek and other allies. All are aspects of the day-to-day operations of the United States Air Force in Europe, (USAFE), with headquarters at Lindsey Air Station, Germany.

USAFE's multiple tasks range through 12 nations on three continents and peoples speaking ten different tongues. The command's mission is twofold—to furnish America's air commitment to NATO, and to support other forces and conduct other missions as directed.

USAFE's organization chain is unusual, since nearly every one of its combat units serves two masters—its peacetime American commander and its wartime NATO commander. Frequent exercises switching tactical units to NATO control make this transition a smooth operation. From commanders to airmen, USAFE men place their NATO commitments as their primary *raison d'etre.*

Serving as Commander-in-Chief of USAFE is General Truman H. Landon who, in addition, also commands NATO's Fourth Allied Tactical Air Force, with headquarters at Ramstein Air Base, Germany.

USAFE receives its operational and policy direction from the United States European Command (EUCOM) and in turn from the Joint Chiefs of Staff. Lateral with USAFE on the organiza-

tiona: chart is the Army's USAREUR headquarters at Heidelberg, Germany, and the Navy's USNAVEUR in London. The majority of staff problems are worked out among the three headquarters without recourse to the unified EUCOM headquarters in Paris.

The various USAFE components direct the following subordinates:

At Dhahran Airfield, Saudi Arabia, the 2nd Air Division operates the airport, supports military training missions with Saudi Arabian armed forces and lends assistance to various United States operations in the Middle East.

The Air Force has assisted the Saudi Arabian government in the development of its military and civil air facilities since World War II. The agreement under which USAFE operates the Dhahran airport will expire in April 1962 and will not be renewed; but this will have no military impact since no combat forces have been stationed at Dhahran.

In Turkey the United States Logistics Group (TUSLOG) serves as support headquarters for all U. S. forces in Turkey and Greece. It supports the NATO headquarters at Izmir, the Military Assistance Advisory Group at Ankara and Athens, as well as various communications facilities, and provides support for the two squadrons of U. S. tactical fighters at Turkey's Incirlik Air Base near Adana.

In Greece, TUSLOG also has a support group at Athen's Athenai Airport—an important way station for air movements between continental Europe and the Middle East.

In London, Third Air Force, an administrative headquarters, deals with the British government on matters concerning U. S. air units in the United Kingdom—principally, the SAC 7th Air Division and five USAFE wings of tactical aircraft at bases in East Anglia. (The latter are under operational control of the 17th Air Force in Germany.)

In Spain, the 65th Air Division, headquartered at Madrid's Torrejon Air Base, has two squadrons of fighter interceptors and a series of Aircraft Control and Warning radar outposts. The 65th Air Division has responsibility for air defense of all U. S. installations in Spain, including SAC bases at Moron, Torrejon, and Zaragoza and the U. S. Navy base at Rota. The 65th also furnishes air defense early warning to the SAC bases in Morocco—bases which are scheduled for closing by the end of 1963.

At Evreux Air Base, France, 60 miles west of Paris, the 322d Air Division (Combat Cargo) runs USAFE's tactical air transport force—a fleet of three squadrons of C-130 Hercules augmented by rotational squadrons of MATS C-124s and TAC C-130s.

In the Congo airlift, which completed one year of operation on 15 July, aircraft under control of the 322d have flown into or out of the Congo more than 37,000 troops from 17 contributing United Nations.

U.S.-sponsored disaster relief expeditions are another of the 322d's specialties. Victims of earthquakes at Agadir, Morocco, typhoons in East Pakistan, fire in Yemen, and famine in the Congo received United States relief through the 322d Air Division-U.S. Army teamwork in the last 18 months.

On the purely military side, 322d Air Division has two primary missions—operate an air logistic service and aeromedical evacuation system throughout USAFE bases in the command, and furnish airlift for Army airborne operations. In this latter mission the 322d works directly with the U. S. Army's 594th Transportation Group (Movement Control) at Orleans, France.

### Training and Aircraft

DURING the past year, an estimated 14 per cent of 322d's allocated flying time was devoted to airborne training exercises. The force is now divided be-

Equipped with rocket booster for swift launching from its trailer, Matador is guided electronically to its target.

tween C-130's and C-124's, giving an increased safety factor to lighten the airborne's heavy load.

Also in USAFE's line-up is the 17th Air Force with headquarters at Ramstein Air Base, Germany. The majority of the 17th AF units are located in France, Germany, and England, with one squadron of F-102 fighter interceptors located at Soesterberg, The Netherlands. Under operational control of the Royal Netherlands Air Force Defense Command, the squadron is the only USAF unit in the Benelux countries. At Wheelus Air Base in North Africa the 17th maintains an all-weather training area—hundreds of square miles of open range, completely instrumented, where pilots can practice live-firing, rocketry, and low-level navigation.

The tactical fighter wings, equipped mostly with the reliable F-100, are phasing now into the F-105, an advanced tactical fighter with all-weather capability. USAFE's missile wing has nearly completed transition to the Mace tactical missile, a reliable low altitude, air breather. The bomb wing's mainstay is the twin-jet B-66. Reconnaissance craft are RB-66's and RF-101's. Rounding out the 17th's force is the F-102 interceptor, whose mission is supported by USAREUR's battalions of Nikes and the new low-altitude airplane killer, the Hawk.

USAFE's strike forces stand a short alert around the clock, geared to strike NATO-assigned targets on order. Crew training covers the full gamut of tactical air capabilities from a show of force to nuclear weapon employment.

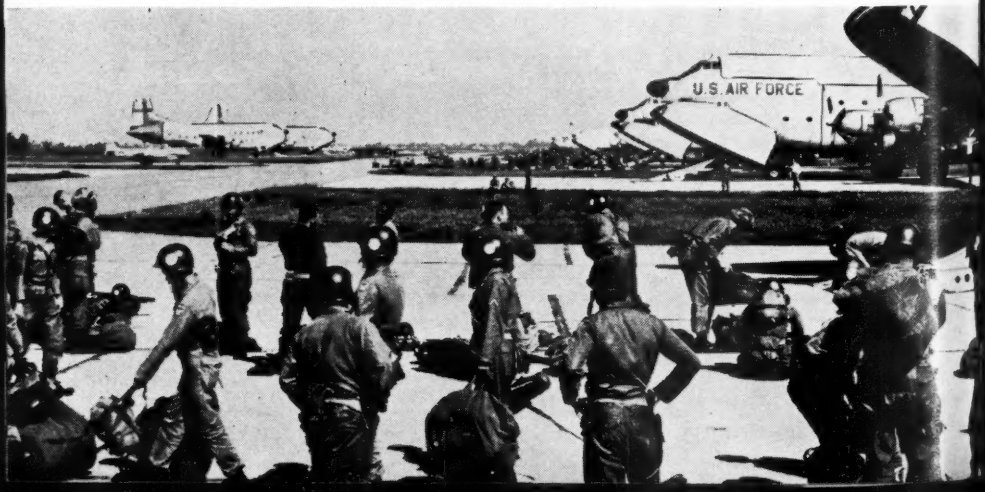
Close air support of the Army is one of USAFE's essential requirements for many contingency plans. The 17th Air Force assigns an average of 100 missions monthly to the Seventh Army in Germany and keeps nine Forward Air Controllers on duty with Army units at all times. During large exercises, such as the annual Wintershield exercise in February, the number of missions and Forward Air Controllers is increased.

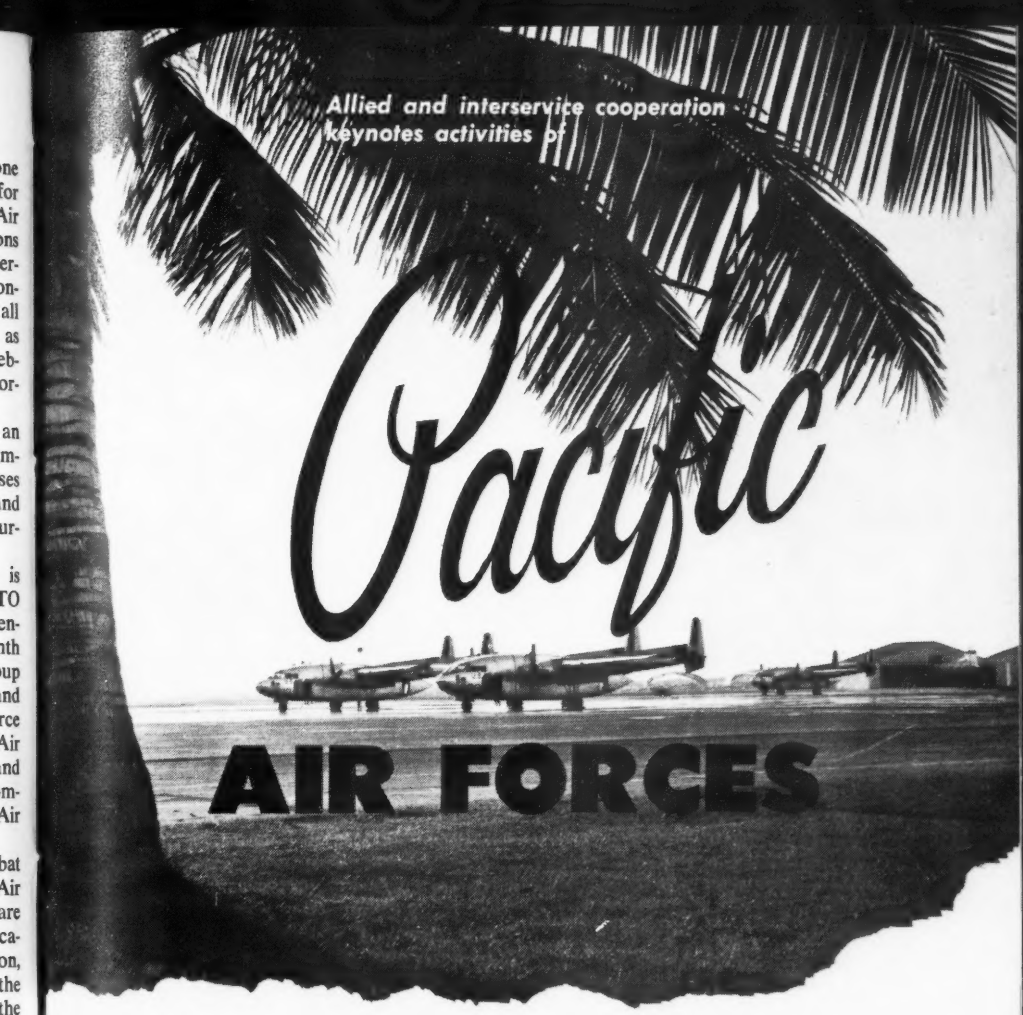
The 17th Air Force also operates an Air Ground Operations School at Ramstein, Germany, with twenty classes yearly to keep Air Force, Army, and NATO member countries abreast of current doctrine, tactics, and techniques.

Ground partner of 17th Air Force is the Seventh Army; each in its NATO role are elements of Allied Forces Central Europe (AFCENT). Just as Seventh Army, under the Central Army Group (CENTAG), works with German and French land forces, the 17th Air Force units join with the 1st Canadian Air Division, German Air Brigade South, and French 1st Tactical Air Force as components of the Fourth Allied Tactical Air Force (4ATAF).

Today, not only are USAFE's combat wings NATO-committed, but all Air Force units within the command are designed to support NATO's wartime capability. Every plan, operation, mission, or major action of USAFE reflects the command's clear intent to support the Supreme Allied Commander in defense of the North Atlantic Alliance.

Swift all weather air transports of U. S. Air Forces Europe carry out varied operations, delivering cargos of peace or war anywhere, any time.






WHEN a fire is located, the first station to receive the alarm and dispatch its equipment is the one closest to the scene. If the blaze cannot be handled by the first units, additional alarms are sounded and more equipment is rushed to the trouble spot.

Basically, the role of Pacific Air Forces, a USAF theater air command, is similar to that of the fire station nearest the scene. Commanded by General Emmett O'Donnell, Jr. and stationed on the periphery of Asia, PACAF is ready to react to any emergency in the Pacific/Far East. Should a conflict expand beyond PACAF's capabilities, additional help may be requested from the Air Force's tactical and strategic reserve forces.

Forward elements of PACAF are the backbone of Allied air strength in the Pacific. Through the Joint Pacific Command, of which PACAF is the air arm, air forces of our allies in the western Pacific, including Korea, the Philippines, the Republic of China, Thailand, and Australia, are linked in a major international aerial force ready to live up to the mutual defense agreements with which the United States is linked in Asia.

General O'Donnell's command includes 68,000 personnel. It is composed of the U. S. Fifth Air Force, the largest single unit in PACAF, the Thirteenth Air Force, the 315th "Combat Cargo" Air Division, and the Hawaiian Air Defense Division. It includes over twenty air bases located in half a dozen foreign countries.

As the largest single contributor to allied air power in the Pacific, PACAF is continually improving its armament and

A major target during Pearl Harbor attack, Headquarters, Pacific Air Forces still bears marks of the assault.

equipment. Supersonic, delta-winged F-102A's have been phased into operation with units of Fifth and Thirteenth Air Forces and the Hawaii Air National Guard, an element of the Hawaiian Air Defense Division. The old sub-sonic "workhorse" of PACAF, the F-86, has faded from the scene.

A continuously improving variety of aircraft and missiles gives PACAF a highly flexible, well-balanced force for all types of tactical and defensive air operations.

PACAF's wartime mission, of course, is to achieve and maintain control of the air in its area of responsibility. Here lateral responsibilities to the other military services come into sharp focus.

Airlift of Army elements into immediate trouble areas is a principal requirement in the conduct of modern ground warfare—and PACAF is well equipped for the job.

Probably no type of aircraft is better known throughout the Far East than PACAF's cargo equipment. Designed for troop carrier and high lift missions, the turbo-prop C-130s, augmented by the Pacific-based C-124s of MATS, are used in a variety of assignments whenever big loads must be moved.

Periodic deployment exercises—often including Army units—are conducted throughout the command. In Hawaii, troops of the 25th Infantry Division undergo practice loading exercises in cargo aircraft at Hickam AFB. Pre-loading practice is done through classroom instruction at Schofield Barracks, followed by actual convoy movement of troops and equipment from Schofield. Such training is designed to eliminate delays during an emergency.

More realistic are the actual field training exercises involving the movement of troops and supplies over long distances. The largest peacetime exercise staged in the Pacific took place in February when a battle group of the Strategic Army Corps and a U. S. Composite Air Strike Force, both based in the United States, joined with air and ground forces of the Pacific Command for exercise Long Pass in the Philippines. Units included elements from Fort Lewis, Washington; Fort Hood, Texas; Fort Bragg, North Carolina; Fort Sam Houston, Texas; and an Ordnance Company from Yakima, Washington.

Army units from the Pacific included 25th Infantry units from Okinawa and Hawaii plus 9th Logistic Command and 1st Special Forces from Okinawa.

## Defense Vigil

IN peacetime, PACAF maintains combat readiness as part of the global USAF team—a responsibility calling for speed, versatility, teamwork, efficiency. On the front line in Asia, it must be continuously combat-ready, capable of operating from regular or deployed bases, always at peak capability.

Steps toward this goal include constant training and cross-training of international forces, maintenance and development of communications facilities where none existed before, and a capability for

rapid dispersal. PACAF must maintain a constant vigil and a full-time air defense system.

PACAF's compact Mobile Strike Force is specially designed for quick reaction in Asia. By virtue of its location at forward bases, the Mobile Strike Force has the capability of quickly initiating air operations in any area in the Far East. In a continuing emergency it would be supplemented by additional PACAF units and eventually by TAC's Composite Air Strike Force stationed on U. S. bases.

In addition to building offense capabilities, PACAF has a definite air defense mission which demands close coordination among allied nations. In many areas, air defense is not only a United States operation but a partnership involving well-equipped allies.

Individually, these allied air forces are not large. Collectively, they have twice as many squadrons as PACAF. In 1958 the combat capability of one of these organizations, the Chinese Air Force, was tested. Operating against Communist MIG-17s in the Taiwan Strait the Chinese Air Force ran up a lopsided 32-2 kill ratio over the Communist-flown MIG 17s and played an important part in turning back an aggressive thrust of major proportions. (See "Decade of Progress on Taiwan," September 1961 DIGEST.)

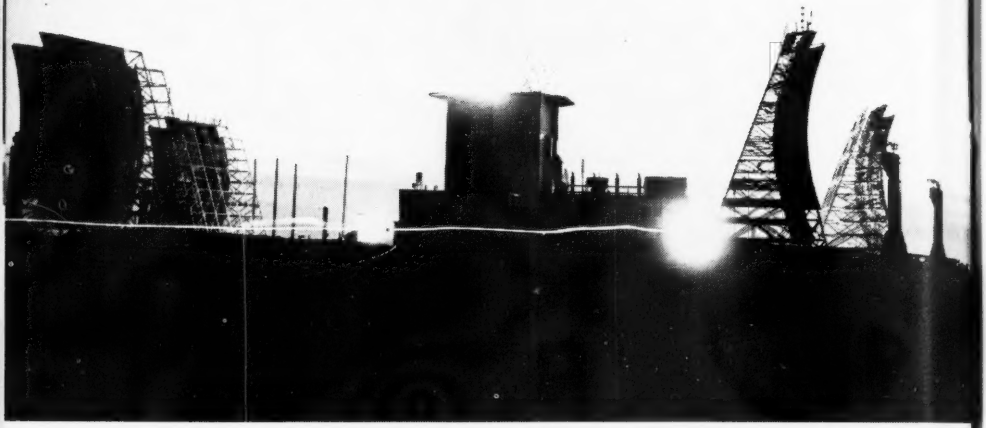
Clearly, air defense in the Pacific cannot be divided into national, independent segments. The air defense of the Pacific/Far East is an integrated effort. A coordinated international early warning network is supported by automatic reporting and presentation devices, all integrated into an efficient aircraft and weapon control system.

In all its planning and operations under the direction of the Pacific Command, PACAF works closely with U. S. Army, Pacific and U. S. Pacific Fleet. Also, through the Pacific Command, PACAF works with United States allies.

International and inter-service cooperation keynotes this unified deterrent system. PACAF is a member of a U. S. team, but it is also a member of an Asian team whose members provide not only air forces but everything from bases to skilled technicians. The strength gained through international and inter-service cooperation gives PACAF the power to accomplish its basic mission—the prevention of war, whether it be limited or general.

Supersonic F-100 Super Sabre Jet, used as long-range fighter-bomber or to escort high-speed, long-range bombers, passes Japan's famous Mount Fuji.

# Alaskan Air Command



ALASKAN Air Command (AAC), with headquarters at Elmendorf Air Force Base, plays an important role in the defense of the North American continent.

Commanded by Major General Wendell W. Bowman, AAC has a fourfold mission — early warning of any attack across the continent's northern boundary; defense of Alaska; support of Strategic Air Command elements in Alaska; and accomplishment of special projects for the Department of Defense and the Alaskan Command.

AAC provides the airfield requirements and housekeeping support for units of Strategic Air Command that are rotated periodically and stand on alert status in Alaska.

Main components of Alaskan Air Command are the 5070th Air Defense Wing, composed of various control and warning sites and the 317th Fighter Interceptor Squadron; the 5040th Air Base Wing, supporting all organizations in AAC; and the 5010th Air Base Group, a forward area of operations for the fighters, located at Eielson AFB.

Carrying out the Command's early warning program are a network of aircraft control and warning radar sites; two Air Force bases — Elmendorf at Anchorage and Eielson near Fairbanks; and DEW Line stations along the Aleutian chain and along the top of Alaska.

All control and warning installations, equipment, and interceptor aircraft are manned 24 hours a day by skilled personnel who keep a vigil over northern skies.

The command utilizes the Delta Dagger F-102 all-weather fighter interceptor. The armed interceptors, ready for immediate action, are capable of spearheading the first attack on airborne enemy forces. During this period, an alarm would be sent immediately to the unified North American Air Defense Command Headquarters at Colorado Springs, Colorado.

AS THE missile threat increases, AAC's warning role is dramatically changing. Rising from the tundra some fifty miles south of Fairbanks is the Air Force's second Ballistic Missile Early Warning Station (BMEWS). This station along with others is designed to provide early warning of any impending missile arrival.

In addition, the aerospace program

Old meets new as sledge dogs greet a C-123 Provider bringing supplies to a remote radar station on Alaskan coast.

came to the Alaskan Air Command last year in the form of Midas, a system which will collect data from satellites, thus detecting hostile missiles at launch, to further the overall effectiveness of the early warning program.

THE conduct of cold weather research is a continuing responsibility for the Alaskan Air Command. The Air Force Systems Command (formerly ARDC) conducts cold weather tests on aircraft and equipment at Eielson; while AAC's Arctic AeroMedical Laboratory near Fairbanks seeks improved means of living, working, and surviving in Arctic climates.

A recent project for the Department of Defense included support of International Geophysical Year research. This involved supply operations to Drift Station Bravo, an ice island in the Arctic Basin.

Heretofore communications in the Arctic and sub-Arctic regions have at times been highly unreliable. The recently developed White Alice System utilizing "forward propagation tropospheric scatter" has made possible a highly reliable communications system for both civilian and military needs.

Due to the severe weather, most AAC supplies must be delivered to remote sites during a short period each year. Aircraft bring in an average of 250 tons a day, and river barges bring in other vital supplies. During the winter, perishables, spare parts, mail, and other timely or seasonal items are delivered on an average of twice a week, so that the long vigil can continue around the clock, throughout the year.

In midst of a great wooded area, the Aircraft Control and Warning Station at Campion may be remote but is well equipped.

*Guarding hemispheric solidarity—*

# Caribbean Air Command

**Albrook AFB in Canal Zone is used as staging area for exercises in which contingents from Latin America serve jointly with United States forces.**

WITHIN the structure of the Joint Chiefs of Staff, the Caribbean Air Command at Albrook Air Force Base, Canal Zone, serves as a component command under the Commander-in-Chief of the Caribbean Command. Within the structure of the U. S. Air Force, the Caribbean Air Command is a major one. Its commander, Major General Leland S. Stranathan, has a twofold responsibility —performing mission objectives assigned by the unified commander, and executing missions as prescribed by the Chief of Staff, Air Force.

In terms of personnel strength and material resources, the command is one of the smallest in the Air Force, but the variety of its mission objectives and the vast area of its geographical responsibility give it added importance in these times. Its area of responsibility includes all the land mass of Central and South America less Mexico and the Antilles. The latter two areas are also included within the scope of USAF military assistance and training.

Perhaps the most important objective of the command is that of developing the concept of hemispheric solidarity and promoting international cooperation in the Western Hemisphere. This objective is realized through the operation of the USAF Mission System, represented in 15 of the 20 Latin American countries; the operation of the USAF School for Latin America at Albrook AFB where since 1947 over 4500 Latin American officers

and airmen have received technical training in USAF specialties and related subjects; and through a program for translating into Spanish for world-wide distribution all USAF publications required for training.

The USAF Missions furnish advice and assistance to their host air forces in all phases of air force operations. They also provide assistance in the development of airfields and air navigational aids. Mission Chiefs who have a Military Assistance Program (MAP) function administer the Air Force phase of the MAP at the country level. MAP support is available to almost all countries for training at the Albrook school or at zone of interior training centers operated by the U. S. Air Force.

In addition to work with the Latin American air forces, the command's mission includes responsibilities for emergency assistance to peoples and governments. Search and Rescue (SAR) operations for the Panama area are a responsibility of the Commander-in-Chief, Caribbean Command, but have been assigned to the Air Force for implementation.

The SAR area includes all of the land mass and certain water areas of Central and South America. A joint coordinating center has been established at Albrook AFB to handle requests for rescue and evacuation of individuals to whom no other relief is available.

The Caribbean Air Command is also responsible for the aero-medical evacuation of patients within its area. It provides airlift support for major disaster relief operations within Latin America, such as the Chilean relief program following the disastrous earthquakes and floods of last year, and other special programs as directed by the Chief of Staff, Air Force.

Students from School for Latin America lower turbine section of jet engine to study power plant.

In support of its own operations, the command provides logistic support for the USAF Missions, Military Assistance Program, and Air Attaches throughout Latin America. It also provides specialized training in support of flying operations in the area.

The Tropical Survival School, which trains personnel of the Army and Navy and foreign visitors as well, is a major attraction at Albrook AFB. It serves as the model for at least two similar training centers which have been established in South America by the Latin American air forces.

In low pressure chamber, left, physiological training is supervised by medical personnel. The command's C-47's make logistic flights over sea, jungle, mountains.

*Essential support at the base of the pyramid is provided by*


# AIR FORCE COMMANDS AND SERVICES

THE Air Force must rely on specialized assistance to its major commands for successful accomplishment of its mission. Forming the base of the supporting pyramid are the ten commands and services to be discussed here.

People — a most important element in any large-scale endeavor—are vital to the combat capability of the Air Force. However, they must be educated, trained, disciplined, skilled, and dedicated to their military role. This process begins in basic training and continues through an individual's entire career.

The three Air Force commands charged with the responsibility of providing this education are the Air Training Command, the Air University and the Air Force Academy. Their products are people, trained to think and trained in the many and varied skills so necessary in today's Air Force.

## Air Training Command

ONE of the largest educational institutions in the world, Air Training Command consists of more than 20 installations and an average of 138,000 assigned personnel. It offers courses ranging from basic military training to the study of ballistic missile weapon systems.

The mission of ATC begins with the recruiting of personnel. It provides basic military training, technical training leading toward qualification in a specialty, and field training of advanced and specialized instruction; officer schooling (excluding ROTC and Air Force Academy), pre-flight training, and flying training leading to an aeronautical rating.

The problems of providing Space Age missile training along with the increasingly more complex conventional weapon systems training are multiplied by rapidly changing technological advances. Take, for example, the change in requirements for electronics training. The fire control system in early aircraft required seven electronics technicians in each squadron. Each of these men required ten weeks of training. Today, an F-102 unit must have 59 technicians and each man needs 44 weeks of training on a system complicated by 4,000 vacuum tubes and 90 black boxes.

With this increasing complexity of electronics equipment, more maintenance personnel are needed, and each man must receive more training to accomplish a similar degree of proficiency. Advances in electronics permit a single aircraft to accomplish more functions with greater accuracy, but more manpower is needed

to maintain its highly refined systems.

The advent of missiles, filled with intricate systems and complex devices, has further complicated training demands.

The increasing complexity of manned aircraft has led to revisions in the flying training program, with emphasis on upgrading of training quality and modernization of aircraft. Eight years ago, more than 7,000 pilots were trained annually. Early in 1957, the yearly rate dropped to 3800 and shortly afterward, when the number of wings was cut from 137 to 128, the announced production was 2700. The Air Force is presently graduating only 1500 pilots per year.

## Air University

AIR University — the educational and doctrinal center of the United States Air Force with headquarters at Maxwell AFB, Alabama — prepares Air Force officers possessing the necessary professional knowledge and background to serve in positions of increasing responsibility. It also is responsible for the formulation of Air Force doctrine, and the direction of the Air Force Reserve Officer Training Corps program.

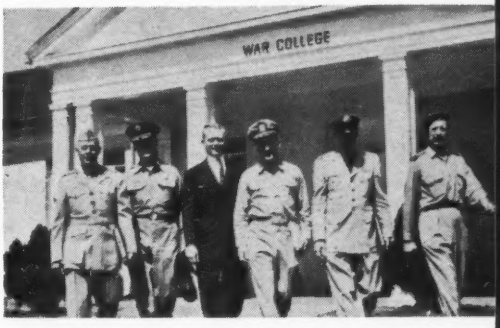
The University is composed of a series of post-graduate professional schools which train air commanders and staff officers in much the same fashion as civilian universities train physicians and lawyers. Aerospace leaders are instilled with the most modern concepts of employment of aerospace weapons. Continuing research is conducted to develop knowledge of aerospace warfare and travel.

The first professional school, which most junior officers attend within the Air University system, is the *Squadron Officer School.* The next level of professional education, usually for senior captains and majors, is provided by the *Command and Staff College.* Senior school of Air University and of the Air Force is the *War College* at Maxwell Air Force Base.

In addition to its major professional schools, Air University has specialized schools such as the *Academic Instructor and Allied Officer School* and the *Warfare Systems School.*

The Air Force Museum, another element of Air University, maintains extensive aviation exhibits at Wright-Patterson Air Force Base, Ohio.

Also at Wright-Patterson AFB is the Air University *Institute of Technology.* This is the primary agency within the Air Force for providing officers advanced education in various important technical areas such as nuclear engineering and electronics. The Institute conducts two programs—the resident school at Wright-Patterson, and a non-resident program in which Air Force officer students attend civilian institutions to further their education in essential fields.




At Air University—all services, allies, agencies.

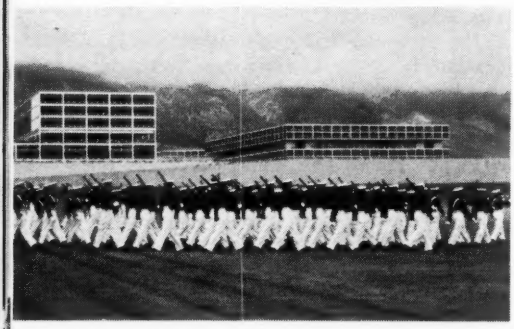
Under the *Air Force Reserve Officer Training Corps Program,* university students who receive Air Force ROTC cadet instruction are commissioned upon graduation as second lieutenants in the Air Force Reserve. Most are ordered to active duty.

Another important program of the Air University is the *Extension Course Institute* located at Gunter AFB, Alabama. Two main categories of personnel are enrolled — Air Force members on active duty who cannot attend resident courses, and Air Reservists not on active duty who desire to further their military education.

The *Air University Library* and *Research Studies Institute* at Maxwell AFB support the Air University educational programs. In addition to more than half a million documents concerned with airpower, the Library includes more than 200,000 books and pamphlets, 3,000 films, 290,000 maps, 1,800 periodicals.

Besides assisting Air University in its educational programs, *Research Studies Institute* performs specialized research for the Air Force.

## Air Force Academy



"Leadership, character, and knowledge."

THE mission of the Air Force Academy is to educate, train, and motivate young men for careers as Air Force officers. It provides instruction, experience, and motivation in qualities of leadership, character, and knowledge essential to the cadet's development.

The four-year Academy curriculum is neither an engineering nor a liberal arts program but a combination of elements of each. It is designed to provide a foundation for development in any of the Air Force career fields. Upon successful completion, the cadet is commissioned a Second Lieutenant in the Regular Air Force, receives a Bachelor of Science degree, and, if physically qualified, the aeronautical rating of navigator. A majority of graduates then attend pilot training.

Located in a spectacular setting eight miles north of Colorado Springs, Colorado, the Academy was dedicated in July 1955 and graduated its first class of 207 in June 1959. In 1962, the Cadet Wing will reach its authorized strength of approximately 2,550, the same as the Corps of Cadets at the United States Military Academy.

## Continental Air Command

CONAC is a nationwide organization responsible for supervision of the Air Force Reserve. Its responsibilities include the vital Air Force Reserve Recovery program under which Air Force Reservists would provide refueling, minor maintenance, security and medical services for returning strike aircraft and crewmen in event of hostilities.

In addition, Base Support units are being established to provide the extra muscle needed to sustain around-the-clock operations in any national emergency. Reservist members of these organizations train and serve with regular Air Force personnel on active Air Force bases. Each base commander determines the kind and number of reserve specialists needed to strengthen his particular base.

Continental Air Command also commands the Air Force Reserve's 15 Troop Carrier Wings, an important part of the Nation's airlift capabilities. It also directs and furnishes administrative, logistic, recruiting and budgetary support to the Air Force Reserve. Another of its many missions is its jurisdiction over the 52-wing Civil Air Patrol.

From its headquarters at Robins Air Force Base, Georgia, CONAC has jurisdiction over a widespread military organization. Directly under its command are six Air Force Reserve Regions which conform to U. S. Army Areas. These encompass a total of 16 Air Force Reserve Sectors.

Reservists get in the survival swim.

CONAC also has jurisdiction over the Air Reserve Records Center at Denver, Colorado. This organization has the gigantic task of maintaining personnel records of more than half a million Air Force Reservists not on active duty.

Along with its primary Air Force Reserve command responsibilities, CONAC carries out many secondary missions for the U. S. Air Force. One of these is coordination with the Defense Department, other Air Force commands and the U. S. Army in providing military assistance during domestic and civil defense emergencies. It maintains liaison with the Se-


"Intricate systems and complex devices."

lective Service System and supervises Air Force cooperation with the Boy Scout Air Explorer Program.

### Air Force Communications Service

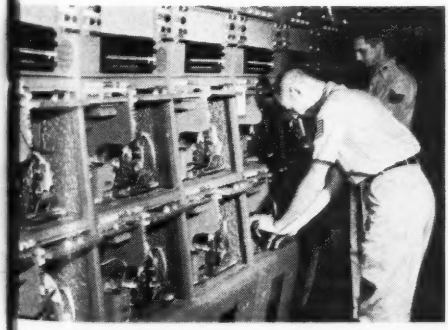
THE Air Force Communications Service, recently established with headquarters at Scott AFB, Illinois, provides a world-wide integrated communications and flight facilities/air traffic control system by which commanders exercise command and control of aerospace forces. It must be flexible and capable enough to meet emergency requirements of any scope anywhere in the world.

Presently the organization is composed of approximately 32,000 communications and air traffic control technicians at more than 200 locations in 46 of the 50 states and in 35 foreign countries. AFCS is a tenant command, and has no bases of its own, but operates on every Air Force base in the world plus many remote installations.

As the communications functions of the various Air Force commands are integrated into AFCS, its strength during the next two years will grow to more than 50,000 — but a substantial saving in manpower and equipment will be realized as compared to the various commands acting separately.

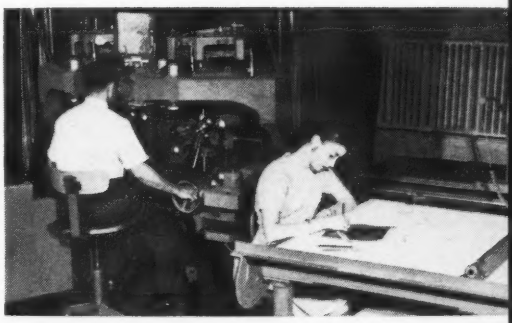
The new organization must provide Air Force commanders the means to launch and, when necessary, to recover aerospace vehicles and weapons in all weather conditions. AFCS must assure the communications necessary to coordinate all elements of the Air Force to achieve full combat potential.

AFCS flight and air traffic control facilities are deployed world-wide. In the United States, these services are coordinated with the Federal Aviation Administration. Overseas, coordination is exercised with the International Civil Aviation Organization (ICAO) and with the sovereign governments concerned.



"To meet emergency requirements."

### Aeronautical Chart and Information Center



Delicate instruments—accurate maps.

THE U. S. Air Force, other Department of Defense agencies, and civilian aviation agencies depend upon the Aeronautical Chart and Information Center publications for air navigation guidance on world-wide missions and operations. And now that space exploration and exotic weapon systems are expanding into the realm of outer space the ACIC must, in a sense, chart the first paths. Lunar charts of the moon's surface features are now rolling off ACIC presses.

ACIC's mission is basically the production of aeronautical charts, graphic air target materials, flight information publi-

cations, maps, terrain models, evaluated intelligence on air facilities and related cartographic devices.

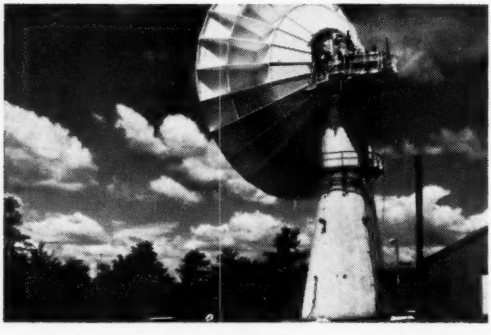
Many of its products also serve United States and foreign military and civilian aviation. U. S. Army and Navy aviation also make use of ACIC products, along with many nations of NATO, SEATO, and CENTO.

### Office of Aerospace Research

THIS office is responsible for planning, programming and managing the Air Force's basic research program and certain aspects of the applied research program aimed at developing superior aerospace weapon systems.

OAR maintains close liaison with the scientific communities of the United States and other nations. It sponsors and conducts research in fundamental scientific areas, including mathematics, physics, chemistry, psychology, biology, astronomy and meteorology. Most of this basic research mission is accomplished through grants or contracts with the available scientific talent of the world.

The Air Force Cambridge Research Laboratories at L. G. Hanscom Field,



"Basic and applied research program."

Massachusetts, and the Aeronautical Research Laboratory at Wright-Patterson AFB, Ohio, provide OAR with a highly competent in-house research capability. Both locations have up-to-date laboratory facilities, staffed by highly competent scientists. OAR Headquarters is located in Washington, D. C.

### Accounting and Finance Center

THIS center is responsible for technical supervision of the Air Force accounting and finance network and the accounting and disbursing functions performed at 544 stations located in 73 countries.

The Center's primary goal is to furnish Air Force Headquarters with valid, timely and easy-to-understand data on dollar obligations and expenditures. The Center keeps dollar tabs on all Air Force assets; it keeps "appropriations" accounts and knows how those dollars are allocated around the world; and it also maintains expenditure accounts.

Each month the Center issues more than 700,000 checks totaling over $1 billion annually including allotments to families, banks, credit unions and insurance companies deducted from the pay of officers and airmen. Approximately $250 million yearly is paid to the Internal Revenue Service, representing income tax and Social Security withheld from the pay of Air Force personnel.

### Headquarters Command

THIS Command has the mission of providing aircraft for and supervising administrative and combat readiness flying for Air Force personnel within the Washington area. It also provides administrative and logistic support for Headquarters, USAF, local Air Force organizations which are not self-supporting and many special activities of the Air Force.

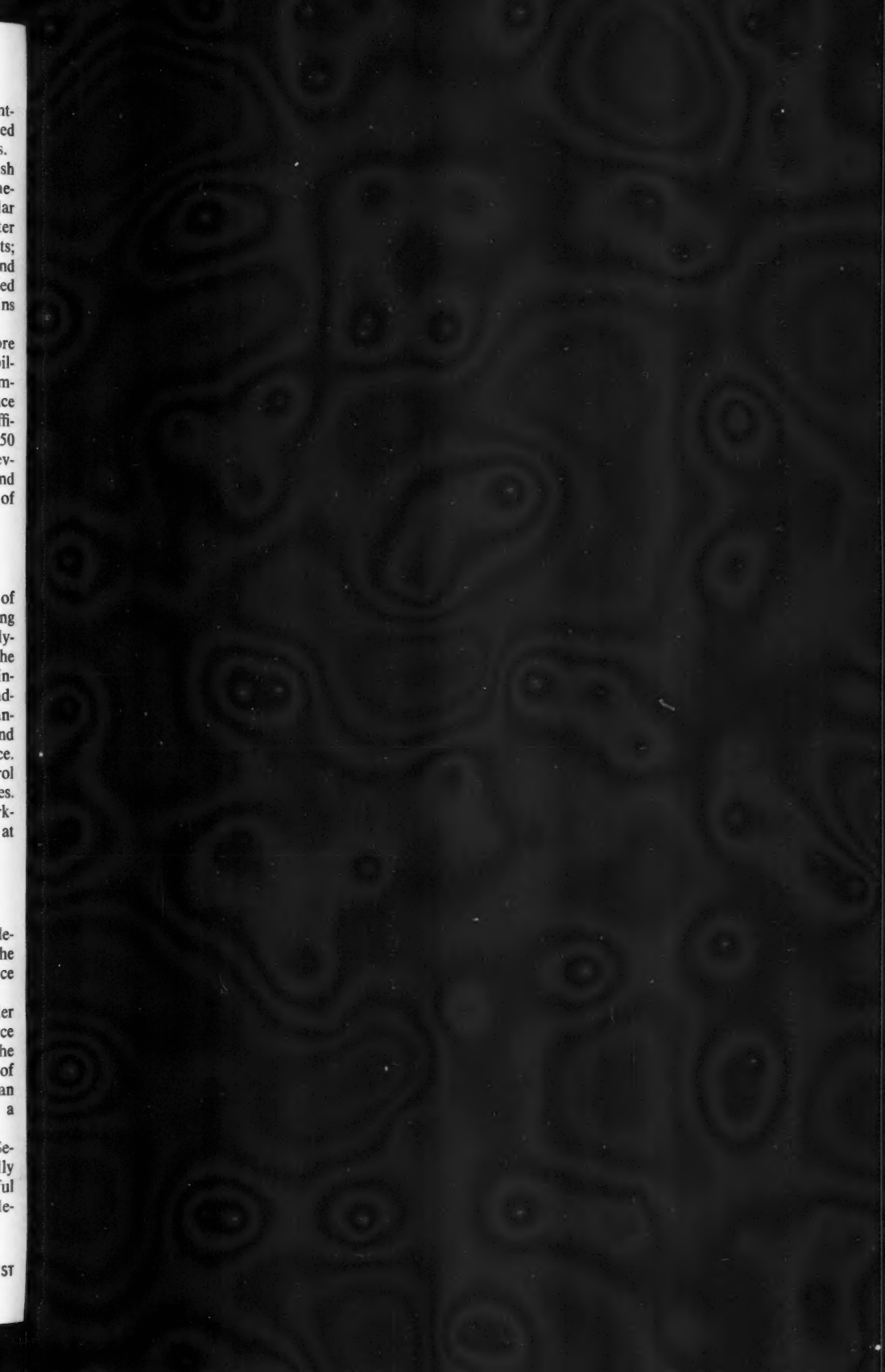
The Command has operational control of Bolling and Andrews Air Force Bases. It also operates a ceremonial unit marking the arrival of distinguished visitors at Andrews or Bolling AFB.

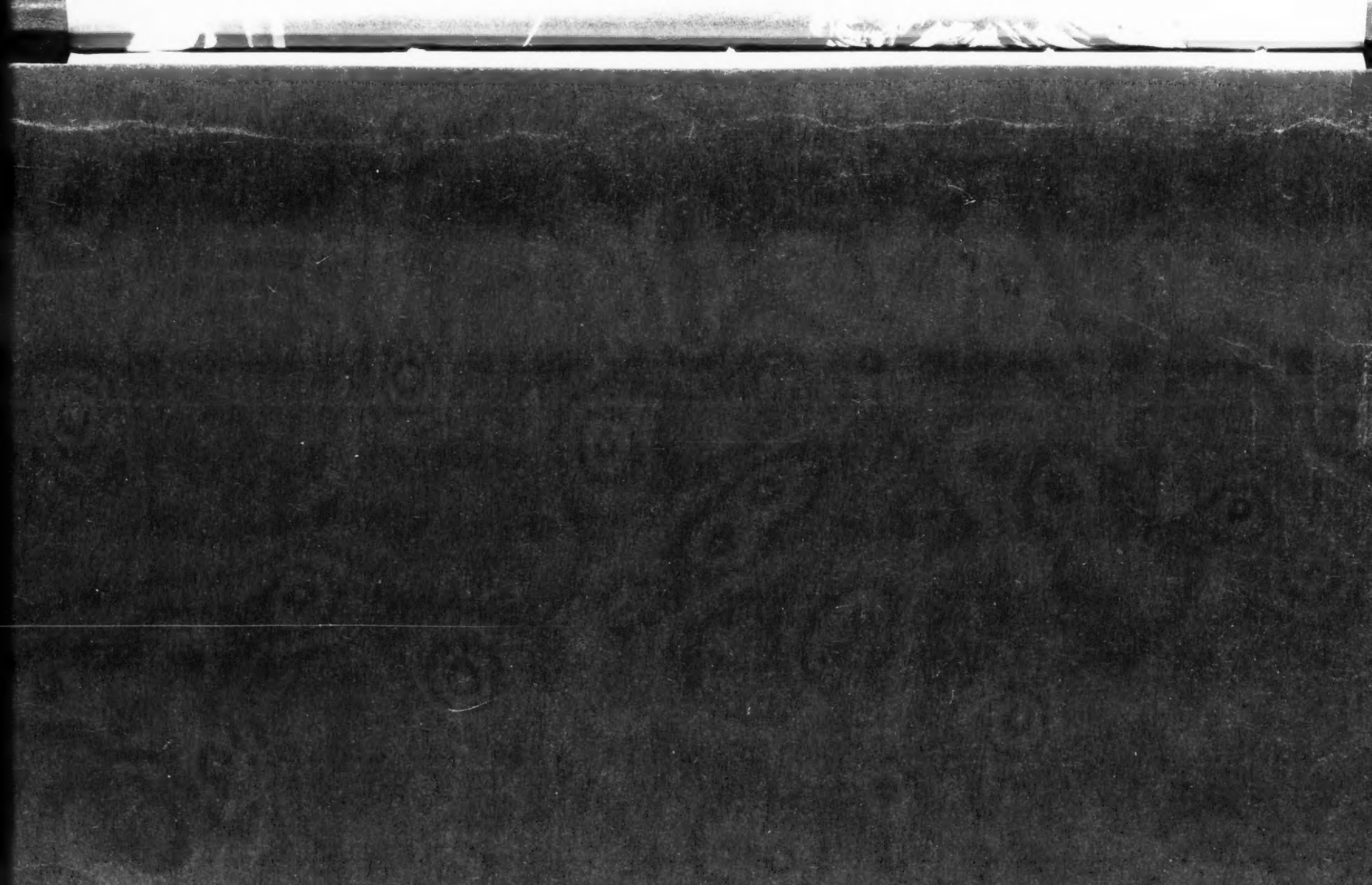
### USAF Security Service

ONE of the least known and yet widely dispersed major air commands in the Air Force is the United States Air Force Security Service.

Organized in June 1948 directly under the Chief of Staff, USAF, the Air Force Security Service began operation in the Washington, D. C., area with a cadre of 11 officers and some enlisted men on loan from the Army. It was redesignated a major Air Command in October 1948.

During its existence, the Air Force Security Service, with headquarters at Kelly AFB, Texas, has grown from a handful to several thousand personnel, with detachments deployed worldwide.





"Land, sea and air components of our national military power are interlocking elements—each indispensable and complementary to the others, forming an integrated team."

*General George H. Decker*
*Chief of Staff, U. S. Army*